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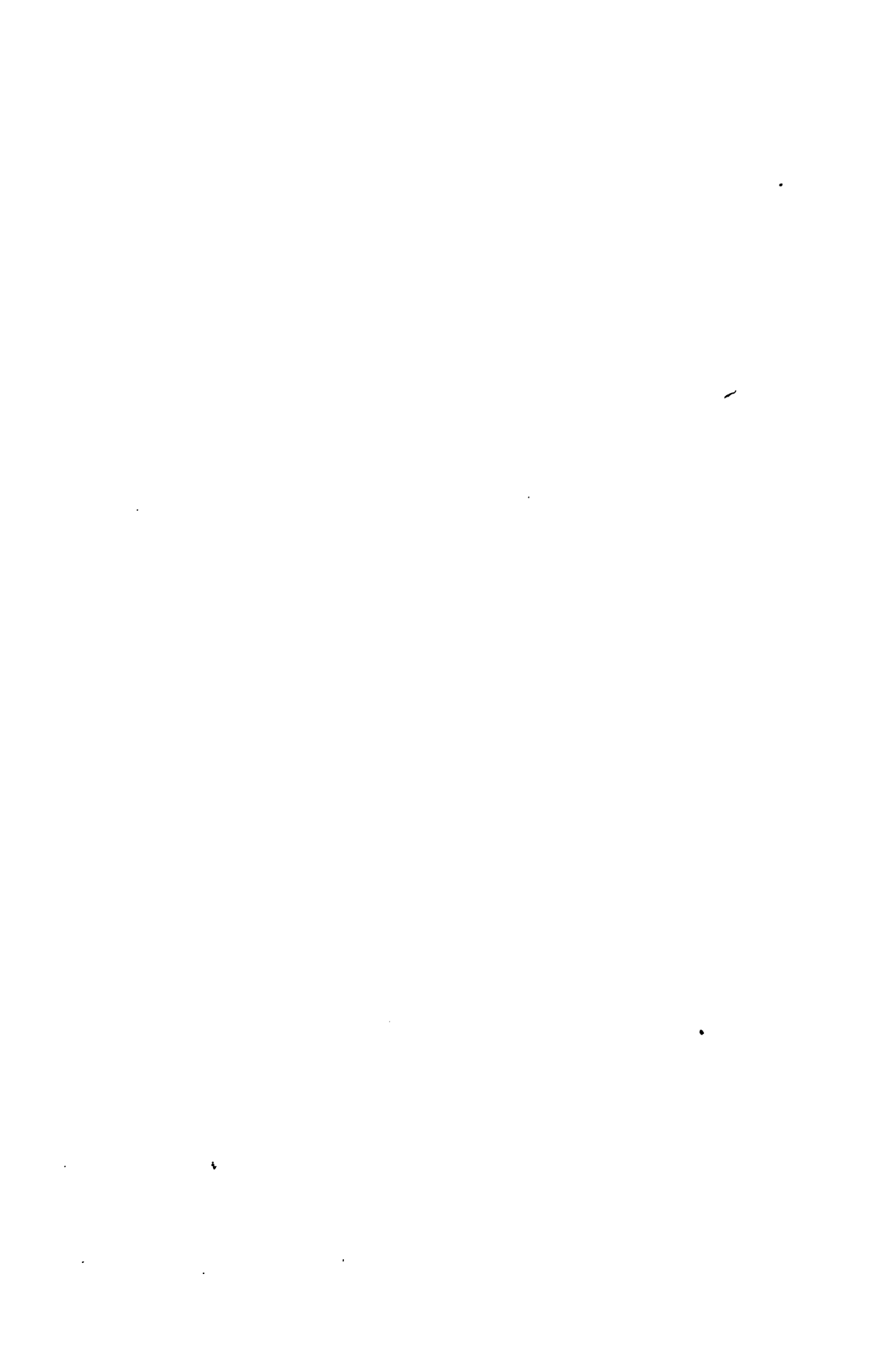


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THE
HYSTERICAL ELEMENT

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ORTHOPÆDIC SURGERY

BY

NEWTON M. SHAFFER, M. D.,

SURGEON IN CHARGE OF THE NEW YORK ORTHOPÆDIC DISPENSARY AND HOSPITAL, ORTHOPÆDIC SURGEON TO ST. LUKE'S HOSPITAL, N. Y.



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PREFACE.

THIS essay was read before the New York Neurological Society on December 1, 1879, and was published in three consecutive numbers of the *Archives of Medicine*. The importance of the subject considered and its almost entire neglect by writers on Orthopædic Surgery, are, it is considered, sufficient reasons for submitting it to the profession in its present form.

Several foot-notes and remarks have been added to the original manuscript, and every effort, compatible with the scope of a Society paper and the space allotted to it in the *Archives*, has been made to render the subject matter of value to the general practitioner.

NEWTON M. SHAFFER.

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THE HYSTERICAL ELEMENT IN ORTHOPÆDIC SURGERY.*

BY NEWTON M. SHAFFER, M.D.

SURGEON IN CHARGE OF THE NEW YORK ORTHOPÆDIC DISPENSARY.—ORTHO-PÆDIC SURGEON TO ST. LUKE'S HOSPITAL.

THERE are two important systems involved in the process of acute local inflammation, namely, the vascular and the nervous. The pathological changes wrought through the operations of the one and the contributive influence of the other in forming the group of symptoms which characterize this condition, need no comment. A typical, local, acute inflammation cannot easily be mistaken for any other pathological state. As we descend in the scale and pass to a study of the sub-acute local lesions, we find that the difficulties in the way of diagnosing this condition are not materially increased. But in the first stage of certain chronic diseases we lose many of the symptoms by which the local, as well as the general, evidences of inflammation are recognized and, aside from the length of time which the history of the case may have covered, there are, not infrequently, confusing elements introduced into the etiological and semeiological factors which demand more attention, I think, than has been accorded to them by some of our most eminent teachers.

* Read before the New York Neurological Society, December 1st, 1879.

It would seem that the symptoms that arise from pathological changes, which, whatever be their etiology, affect principally the local, vascular tissues of a part could be easily distinguished from those which find expression through the medium of the peripheral nerves alone. And, so far as the acute local lesions are concerned there should be no difficulty. But many chronic diseases do not present, especially in the first stage, symptoms of any urgency whatever; they are not accompanied by any constitutional disturbance and the insidious progress of the disease is very suggestive of the manner in which the lesion is undermining the tissues involved. In the acute local lesion, the vascular plays the important part, and attention is chiefly directed to it, both as regards symptoms and treatment. On the other hand, in some forms of chronic inflammation, and especially in certain lesions of the articulations, the neural element predominates and the vascular symptoms are, in many cases, not at all apparent. These facts being duly recognized, it becomes clear why so many of the so-called hysterical, surgical cases resemble an insidiously progressive chronic disease; for with chronic inflammation there is always a localized disturbance of function, associated with other symptoms which in many instances are very obscure and of uncertain etiology, while in the hysterical state there is also localized disturbance of function associated with manifestations which possess, in many instances, all the important characteristics of local inflammation.

For many years the effect of the emotions, not only in producing, but also in relieving abnormal states, has been recognized. In Burton's "Anatomy of Melancholy" may be found references to the value of this factor both in diagnosis and treatment. Many other works could be referred to, illustrating this point, with interest and profit. But this is scarcely the occasion for an extended research into the

literature of this subject. Nor will it be of service to attempt an analysis of the relations of the three great nervous centres to the phenomena which are generally described as hysterical. We would rather say with Dr. Reynolds that "the essential fact of Hysteria is in the disturbed balance between the voluntary and involuntary power. Volition is defective; emotional, sensational and reflex activity are in excess, and the distortion may be brought about by the many divers circumstances of age, sex, position, employment,—but the precise nature of the change which is the efficient cause of such distortion, *i.e.*, the primary physical fact in the pathology of Hysteria, has yet to be discovered.*"

Tuke remarks: "We have seen that the influence of the mind upon the body is no transient power; that in health it may exalt the sensory functions, or suspend them altogether; excite the nervous system so as to cause the various forms of convulsive action of the voluntary muscles, or depress it so as to render them powerless; may stimulate or paralyze the muscles of organic life, and the processes of nutrition and secretion;—causing even death.†"

It will not be difficult for us, therefore, to appreciate the effect of emotional activity upon the voluntary muscles. Indeed, all the sensations of which these muscles are capable, all the movements they may be made to undergo in response to the will, may be excited by this emotional cause, or voluntary muscular action may be apparently wholly lost through the same disturbing element. Still more, the various morbid sensations of the surface may be produced. Even superficial vascular changes may be brought about, inducing a local hyperæmia or an ischæmia. With defective volition, an excess of emotion, undue ac-

* A System of Medicine, edited by J. Russell Reynolds, M.D., vol. ii, p. 101.

† Influence of the Mind upon the Body, by Daniel Hack Tuke, M. D., M. R. C. P. p. 395.

tivity of sensation, and an easily excited reflex movement—especially if complicated by precocity in the child, or mental exhaustion in the adult, a long and intricate series of symptoms may follow, including disturbed muscular action, varying from the most extensive and general convulsion to the semi-tetanized muscles of one of the extremities, and from an apparent hemiplegia to the loss of power over a group of flexors. If these facts be appreciated, we can wholly coincide with Tuke when he says that “there is no sensation, whether general or special, excited by agents acting upon the body from without, which cannot be excited also from within by emotional states.”* And to this statement we may add: There is no articular deformity depending upon chronic inflammation or disturbed muscular action—be it either loss of power or contraction—which cannot be simulated, and not unfrequently is simulated in the conditions which I have briefly attempted to describe.

The early writers on diseases of the joints fail to mention the existence of that variety of articular deformity which is associated with a more or less marked hysterical diathesis. Since the time, however, that Brodie called attention to the circumstance that many serious pathological conditions might be closely simulated by the condition which Skey † recognises but does not name, except to call it Hysteria, which Paget ‡ more recently describes as Neuromimesis, and which Esmarch § calls *Gelenkneurose*, the fact that these peculiar disturbances of the nervous system may successfully imitate the more serious deformities has been recognized; though, strange as it may seem, some of the more recent and pretentious works on the subject of joint

* Op. cit. page 146.

† Lectures on Hysteria, New York, 1867.

‡ Clinical Lectures and Essays, New York, 1875.

§ Ueber Gelenkneurosen, Kiel, 1872.

disease and club foot do not even refer to the fact that there are such conditions as hysterical deformities, while others dismiss the matter with only a passing notice.

In very many important respects the false so closely resembles the real disease that even the most experienced are, at times, at loss to decide whether, for instance, a given articulation is in a condition of progressive chronic disease, or simply in a neuromimetic state. Esmarch, after calling attention to the difficulties in diagnosis, relates that for many weeks he was undecided regarding the state of an ankle joint, which ultimately proved to be in a condition of *caries sicca*, and required amputation. Skey's testimony on this point is forcibly stated as follows: "It may be asserted with truth that every part of the human body supplied with nerves—be they cerebral, spinal or ganglionic—may become, under provocation, the seat of local symptoms so closely resembling the real disease to which that part of the body is liable, as to appear identical with it, and the resemblance to which is so perfect as to deceive the best of us." Paget says, after enumerating some of the hysterical conditions:—"And there is scarcely any of these disorders in which the mimicry of real disease is not sometimes so close as to make the diagnosis very difficult."

If these cases were rare they would be regarded as singular phenomena, but their frequency takes them from the list of even infrequent maladies and calls for recognition from all, since each one of us is apt to meet them any day. Brodie makes this remarkable assertion—which Esmarch fully endorses: "I do not hesitate to declare that among the higher classes of society at least four-fifths of the female patients who are commonly supposed to labor under disease of the joints, labor under hysteria and nothing else." Skey, who obtained much of his knowledge of hysteria in St. Bartholomew's Hospital, "includes a large proportion of the lower

classes," and says, "in reference to spinal affections in young persons I unhesitatingly assert that the real disease is not found in a greater proportion than one case in twenty—and even this is a liberal allotment."

My own experience convinces me that neuromimetic joints and spines, and more particularly the latter, are very frequent both in the upper and lower classes, and especially at that age when hysteria is most likely to develop. In other words, I may say that many cases of simulated disease of the articulations are not recognized as such, and it is a fair presumption that some, perhaps many, of the remarkable "cures" of which we hear now and then have been cases which, while presenting all or, at least, the more suggestive symptoms of the lesion, were simply in a state of neuromimesis. And this statement is notably true of the class of charlatans who profess to have, by inheritance or otherwise, the ability to cure these diseases by processes peculiar to themselves.

The cause of these erratic manifestations of the nervous system is very obscure. That it is not "mimicry" in the literal sense of the word is proven by the fact that the majority of my own cases have never had the opportunity to become acquainted with the symptoms of the disease itself. The causes assigned by the patients have been those which are ordinarily looked for in a history of chronic joint disease. A fall, a sprain, or over-exercise in skating or walking, in the majority of cases, forms the occasion for the first manifestation of the symptoms, though, as in the real disease, a history of traumatism is often wanting. After the symptoms once find a local expression, they partake of all the pertinacity and chronicity of joint diseases, and whether the muscular disturbances partake of the character of an intermittent *contraction*, or of the typical hysterical *contracture*; whether the general nervous symptoms are partly held in

subjection by will power alone, or give evidence of functional disturbance by various erratic, emotional or typical hysterical symptoms, the solution of the enigma lies in a familiarity with the natural history and course of the real disease.

I have deemed it best in presenting a few of the cases I have met with, to follow the regional method, to bring out as fully as possible the symptoms, and to compare them with those of the chronic lesions of the joint involved. In following this plan I propose to give a full history of each case,—fuller, perhaps in some instances, than some might think necessary; but as many of the differential points are interwoven with the manner in which the history was developed, I have thought it proper to give a few of the histories practically unabridged. As the knee joint affords an excellent opportunity to study both the real and simulated states, I will present some cases of neuromimesis of this articulations first. We will then consider the hip and spine, and lastly, club foot,—giving comments, differential tables and conclusions in their proper places.

CASE I.—While on a visit to Troy, N. Y., in December, 1876, I was asked by my friend, Dr. W. P. Seymour, to see with him a little girl of 5 years of age, the daughter of a clergyman living near the city, who had been troubled with some very suggestive symptoms affecting the hip and knee joints on the left side—following a fall—and which had existed for several weeks. I was introduced to the patient at dinner, and had the opportunity of watching her as she sat at the table. She was evidently a precocious child, and mentally very active. She had that peculiar complexion which is supposed to be indicative of the strumous habit. I also noted that she had large eyes, with long eyelashes, blueish sclerotic, pale skin, showing the temporal veins very clearly, and a luxuriant growth of hair. These facts, with the characteristic gait and attitude of chronic joint disease, which were noted as she left the table, led me to infer that our patient had some serious chronic inflammation of either the hip or knee.

Indeed, a diagnosis of morbus coxarius had already been made by a prominent surgeon of Albany, who had examined the case a few days prior to my visit; a diagnosis, however, which Dr. Seymour had rejected. After dinner a critical examination of the patient was made. In the standing position there was at once apparent a slight discoloration of the tissues over the knee joint, a marked flexion of the articulation (about 35°), and a perceptible atrophy of the thigh and leg. The patient stood in the attitude characteristic of hip disease, with exaggerated flexion at the knee. Almost the entire weight of the body fell upon the unaffected limb, and there were evident the lowered gluteo-femoral crease, the flattened natis and the tilting downward of the pelvis on the affected side, which makes the limb seem apparently longer, and produces the symptomatic lateral curvature of chronic coxitis. When asked to bend forward to pick up a key from the floor, the patient carried the entire limb, in its deformed position, backward with the pelvis, refusing to bend in the slightest degree either the hip or knee. When the patient walked, little or no motion was apparent at the hip joint, the knee was neither flexed nor extended, and the limp was very marked and characteristic of chronic osteitis of the hip or knee. The patient was now placed in the supine position. It was found that the affected knee joint was slightly warmer than its fellow, and that there was an almost complete obliteration of the fossæ on either side of the patella. There was tenderness on pressure over the condyles of the femur, and below, over the ligamentum patellæ. This tenderness was not present on the opposite side. The limb was then examined as to the passive mobility of the hip and knee joints. When the limb was moved as a whole, with the knee in its acquired position; no muscular rigidity existed at the hip. But if the attempt was made to flex the thigh on the pelvis, at the expense of motion at the knee, a very decided resistance was experienced at the hip. When the attempt was made to flex or extend the knee, it was found to be rigidly held in its deformed position by a very decided muscular contraction, and when a slight degree of force was used, the joint refused to yield, and the patient gave evidence of pain, both by facial expression and orally. The pain was referred to the inner side of the joint. A persistent attempt to flex the leg on the thigh, using a continuous rather than a great degree of force, was followed by a very perceptible, almost audible "click," which, Dr. Seymour remarked, reminded him of the sensation imparted to the hand as a knife blade

passes its half opened position. Motion now, inside of the degree of flexion at which the limb had been habitually held, was free and unaccompanied by pain, but any attempt to extend the limb past its usual stopping point, was met by a decided muscular resistance, and apparently gave pain.

Persisting as before, and using a continuous force, gradually increasing it, and diverting the patient's mind in the meantime by telling her an amusing story, the leg passed the apparent obstruction, again accompanied by the "click." Now, again, we found free movement. These manipulations were repeated many times, and always with the same result. The leg would be arrested, either in flexion or extension, at exactly the same point, and the suggestive "click" would invariably occur as this point was passed. After these manipulations the patient was asked to move about the room. It was found that she could walk better than before. I may remark also that during the examination the patient showed considerable emotion, which did not, however, find expression in tears.

There were no hyperæsthetic spots over the spine. There was no history of masturbation, and the genital organs showed no evidences of irritation. The child had always been mentally over-active for her years, and there was nothing of importance developed in the hereditary history. Her general health had always been good, with the exception of the usual diseases of childhood, which she had always borne well. There was a history of disturbed sleep.

The previous treatment of the case included counter-irritation and almost perfect quiet of the affected limb. What proved to be over anxiety on the part of the parents and friends of the patient, had directed a great deal of attention to the child, who in her emotional condition was, not unnaturally perhaps, not averse to this excess of attention.

Remarks.—The differential diagnosis involved a consideration of three conditions—the hip being excluded, as no positive symptoms of any lesion of this articulation presented. I. An osteitis or chondritis of the knee, following some injury to the cartilage at the time of the accident, and which would account for the "click." II. A chronic synovitis, not involving the bone, but attended with anom-

alous symptoms. III. A neuromimesis. After duly considering these conditions, the last was diagnosed, and, for the following reasons:

1st. A traumatism sufficient to lacerate the cartilage, and cause a mechanical impediment to motion, would have been attended with urgent, acute symptoms. 2dly. An osteitis dependent upon an injury or otherwise, would have been followed by more expressive symptoms, and the muscular rigidity would have been uniformly present, and would have prevented motion in the extremes of flexion and extension—not at a point between these extremes. 3dly. The swelling was subcutaneous, and, as was afterwards proven, due to the effect of the counter irritation, thus eliminating the synovial membrane from implication. 4thly. The pain was demonstrated to be hyperæsthetic, and the heat was inferentially supposed to be a simple, local hyperæmia, due to the counter irritation. As it disappeared in a few days, this supposition seemed correct. 5thly. The child was very emotional during examination, and would permit various movements of the limb when her attention was directed to other matters, which motions she would not allow when her mind was concentrated upon the joint. 6thly. The atrophy was no more than would result from the enforced disuse of the limb for several weeks. 7thly. The limp, attitude, etc., were the result of the position of the joint, which position, though fixed during the day, was modified during sleep, free movement of the articulation being then possible without the “click.”

I have attempted to explain the peculiar “click,” which forms the prominent peculiarity of the case, by supposing it to be due to the reduction of a temporarily displaced tendon, or perhaps to the reduction of a slight sublaxation, in either event caused by muscular action. This latter condition I have seen in one other case.

The diagnosis was a surprise to the mother of the patient, for she had been led to infer, upon what we all would esteem good authority, that a serious chronic inflammation of the hip joint existed. Dr. Seymour wholly coincided with me in my opinion. The parents were directed to stop all local treatment, excepting daily manipulation of the joint. The child was not to be asked any questions regarding her knee, and the excess of attention she had received was to be discontinued. The patient's thoughts were to be diverted from herself; plenty of exercise in the open air was insisted on, and a general tonic course of medication was advised. A few months later the mother of the patient called upon me, and stated that for a few weeks only slight improvement was noticed, but that afterward, under the stimulus of a promise that if the patient would walk "perfectly straight" by a certain time she might attend a Sunday-school festival in which she was greatly interested, the improvement became more rapid. She did walk without any limp; there was no pain, and the recovery was complete. There has been no return of the trouble since that date.

This patient exhibited symptoms which would suggest a primary local lesion of the knee joint involving the vascular system, heat, swelling, redness of the cuticle, and pain, following an injury; adding to these, immobility of the articulation, limping, muscular atrophy and disturbed sleep, and all the important symptoms necessary to a diagnosis of chronic disease of the joint were present.

CASE 2.—G. L. R., a boy of 12 years consulted me on November 25, 1878, introduced by letter from a prominent surgeon of western New York. The patient came into my office leaning on the arm of an attendant, limping very badly and complaining greatly of his left knee.

Inquiry developed no tendency to hereditary disease of the articulations, no history of phthisis or rheumatism, and there was

nothing of importance in his early history,—he had always been a healthy, though not a rugged boy.

In February, 1878, the patient fell upon the ice in front of his home, striking upon his knee-joint. The injury was quite severe and the boy was carried into the house. There was great pain, followed by ecchymosis and some heat and swelling. These symptoms continued for a few days, and after their most acute phase subsided, there was more or less pain on moving the joint, with swelling at the point of injury. He remained in bed for five weeks, and for the two or three weeks following he was dressed, but hobbled around saving, in every possible way, the affected joint. Finally, about ten weeks after the injury he walked as well as ever, and during the spring and summer walked to and from school daily, a distance of four miles.

On October 10th, he went on an errand for his mother, and on his return his knee pained him very much and he was obliged to stop walking. After this, he “hopped around,” always holding the leg flexed on the thigh in one position. From October 10th to November 25th, (the day he consulted me), he had not been out of doors, except to come to the city. There had been no acute pain in the joint when it was at rest, but any sudden motion produced “sharp pain :” he had slept tolerably well ; there was considerable atrophy of the thigh and the leg muscles and the boy was thin and anæmic and, evidently, very apprehensive about his knee. The joint was held quite rigidly by muscular action in the extremes of flexion and extension, but examination proved that no real muscular spasm existed : the joint could be flexed and extended normally by persistently using a very moderate degree of force, though the attendant states that the position of the leg was not modified during sleep.

The patient gave a history of mental overwork : had studied hard and for several years : tastes had always been effeminate—always very gentle in his play, preferring the society of girls to that of boys of his own age ; not emotional as to tears, but is what would be called “a nervous boy.”

Remarks.—My comments on this case will consist simply of extracts from the letter which I sent to the family physician : “I may summarize the results of my examination as follows:—no marked pain on motion which was not limited by any reflex muscular spasm, though the spasm was closely

imitated in the extremes of flexion and extension: no strictly involuntary symptoms at all, either nocturnal or diurnal: no swelling except, perhaps, a very slight one under the ligamentum patellæ, where the thickness of the cuticle (from iodine) made palpation very unsatisfactory: local temperature 2° lower than on opposite side: electrical reaction of muscles of leg and thigh normal, the same on either side: defective nutrition of limb due to disuse solely." * *

"The boy is mentally very acute and physically very sluggish. I find he is inclined to avoid boyish occupations and consider his lack of stamina and pasty complexion to be not of the strumous sort. In some respects our patient is what may be called a typically neurotic boy."

"I would advise a gradual increase in the use of the joint and limb, for a few days passively using electricity, massage, etc., and then I would put the patient on his own resources entirely: he is to be asked no questions as to his feelings or sensations: give also, a thorough course of iron, cod-liver oil and malt, and keep the boy out of school and at out-door sports for at least one year."

The patient wholly recovered in a few weeks and has grown six inches since I saw him.

A diagnosis of chronic joint disease had been made in this case by a prominent surgeon, whose contributions to surgery have more than once been quoted abroad, and this gentleman was about to apply apparatus to the patient, rest and counter irritation having resulted only in an increase of the symptoms.

CASE 3.—Miss K., a young lady of good physique, residing in New Jersey, consulted me in February, 1878, in reference to what were apparently severe and urgent symptoms of disease of the knee joint, the patient presenting herself on crutches.

She gave the following history:—About four years ago she began to have pains occasionally in the left knee: they were very acute, occurred at irregular intervals and were increased by walking. There was no limping at first. The pains came and went

without any recognized cause and were as frequent at night as by day. She never awoke with pain and was, as a rule, free from it up to 9.30 o'clock, A.M., when it would generally occur: there was never any swelling of the joint which the patient could detect, though it was frequently hotter than the sound one: she was always able to move the joint with more or less freedom though at times with considerable pain: passive motion was accompanied by considerable resistance in the extremes of flexion and extension. After some months the symptoms became worse and the family physician ordered crutches, which the patient has ever since used, without, however, the relief which was anticipated. Accompanying these local symptoms were other manifestations, affecting, especially, the head and neck. The sensations here were those of "trouble in the back of the neck"—pain, not increased by motion, a sensation of heat "like a hot plate," in the cervical region, but no headache. It sometimes happened that when the knee did not ache, the neck did, and *vice versa*. The pain in the knee was not superficial but was referred to the very "centre of the joint." It was either a "gnawing or a lancinating pain:"—there were no hyperæsthetic areas and, at the time of the examination, the local and general temperatures were normal. The patient did not look at all ill, and there were no facial traces of suffering so frequently seen in chronic osteitis of the joint ends: but there was hereditary history of phthisis, the mother having died therefrom. The case had been under the care of one who would be recognized as a competent observer, who, attributing too much weight, in the absence of specific symptoms, to the phthisical history, had made a diagnosis of incipient osteitis of the knee. There were symptoms which suggested this lesion, but like all purely neurotic symptoms, they were extremely irregular and inconstant, and this very element was the basis of an exclusive diagnosis in the case.

The crutches were dispensed with and the patient, who was an indefatigable teacher, was removed from her routine duties. It took the patient five days only to discontinue the crutches, though she had used them continuously for months and had not gone out of the house for the three months preceding Christmas, 1877:—this discontinuance did not produce pain and their absence, after the novelty wore off, was pleasant rather than otherwise. During the past summer the patient has been at the seaside and among the mountains, has used no artificial support whatever, and has returned greatly improved.

I may remark that this case is typical of that kind of "hysteria" which develops in those who are physically robust, but who are subjected in their occupations to constant physical and mental strain. This lady filled an important position in a large school and gave almost incessant attention to her duties. I draw attention to this and, in noting the absence of any history of traumatic influence, to the difference that exists between the simulated joint lesions dependent on mental overwork and strictly emotional cases with the history of traumatism. In the first there are symptoms which find a local expression in other parts of the body, while in Cases 1 and 2, there are first local injuries through which the fear and other emotions of the patient seem to find an exit.

During the fall of 1875 my attention was especially directed by a case which occurred in my service at the Orthopædic Dispensary (Case 4) to the fact—which I had before noted—that the expressive muscular atrophy which occurs in morbus coxarius did not exist in the hysterical state which simulated it. In this particular case a slight atrophy only occurred even after several weeks of treatment which involved complete disuse of the limb and the pressure of adhesive plasters and bandaging, all of which are the necessary accompaniments of the mechanical treatment. This led me to investigate the electrical condition of the muscles in both the hysterical and diseased conditions of the hip joint especially. The result was that in the former I found in all the cases I examined a normal degree of muscular contraction in response to the faradic current, while in the latter, even in the earliest stages, and apparently coincidental with the first appearance of the reflex muscular spasm, there was a marked reduction. After many experiments, including the same tests as applied to voluntarily tetanized muscles, and which showed a normal reaction like the hysterical, and

all of which uniformly led to the same conclusions, I invited my friend, Dr. E. C. Seguin, to apply the same test to several cases of hip joint disease. This he did on May 17, 1877, and the result of my own observations, sustained by Dr. Seguin's experiment, are duly recorded in the *Archives of Clinical Surgery*, for June, 1877. From this article* I may be permitted to quote the following sentences: "The atrophy which occurs from simple functional inertia, combined with the pressure produced by adhesive plaster and bandaging, is witnessed when the not infrequent error is made of treating by these means and an apparatus, a neuromimesis of a joint lesion, for the real disease. This simple atrophy following disuse and pressure is altogether different from that which ensues from an actual joint lesion, and is unaccompanied by a loss of electro-muscular contractility."

These observations were based wholly upon original research, and while, so far as I know, I was the first to apply the electrical test as an aid in the differential diagnosis of true and false joint diseases, it remains for me, as a matter of justice to Charcot and Esmarch, as well as to myself, to state that Charcot mentions that in a case of hysterical contracture "the electrical contractility of the muscles has remained nearly normal," and Esmarch, in his essay on "*Gelenkneuosen*" remarks, "Notwithstanding, the muscles maintain a well nourished condition, and retain after long disuse, their electrical reaction." At the same time I was studying this subject, Dr. Emile Valtat of Paris, was engaged in experimentally demonstrating the muscular atrophy of joint disease† and reached in some respects the same conclusions as my own, as applied to the condition

* Reflex Muscular Contraction and Atrophy in Joint Disease, etc., by Newton M. Shaffer, M.D.

† De l'Atrophie musculaire consécutive aux maladies des articulations, Paris, 1877.

of actual disease. After these statements it becomes unnecessary for me to call attention to the value of the faradic current, as a means of precision, in the diagnosis of the neuromimetic condition.

In Seguin's "Series of American Clinical Lectures,"* I have given parallel tables showing the differential points in diagnosis of typical cases of chronic synovitis and chronic osteitis of the knee joint. I will reproduce them here, make one or two additions to them, and follow them with remarks on the diagnosis of the neuromimetic state, as applied to the same articulation.

CHRONIC SYNOVITIS OF THE KNEE JOINT.	CHRONIC ARTICULAR OSTEITIS OF THE KNEE JOINT.
1. Capsule thickened,—Effusion marked.	1. No thickening of capsule evident,—No sense of fluctuation.
2. Natural contour of leg and thigh,—Joint outline obliterated.	2. Muscular atrophy marked,—Joint outline clear and distinct,—Joint appears large, on account of the diminished size of both thigh and leg.
3. Motion extensive and nearly normal.	3. Motion <i>nil</i> .
4. Resistance to motion <i>elastic</i> , and efforts to overcome it not productive of pain.	4. Joint held perfectly rigid by muscular action alone.
5. No reflex muscular spasm present.	5. Reflex muscular spasm affecting both flexors and extensors.
6. No pain present, nor produced by forcible tests.	6. Acute pain upon the slightest attempts at joint motion.
7. No perceptible limp or hesitation in walking.	7. Unable to walk from pain and deformity.

* The Etiology and Pathology of Chronic Joint Disease. Vol. iii, no. vi.

CHRONIC SYNOVITIS OF THE
KNEE JOINT.

8. Sleep normal,—No reflex osteitic cry.

9. Femur and tibia in normal relation to each other.

10. Symptoms local, so far as those *dependent* on the joint lesion are concerned.

11. The superficial tissues over the joint may be either slightly warmer, or the same as the healthy joint.

12. Electrical contractility of leg and thigh muscles not impaired before the occurrence of the reflex muscular spasm.

CHRONIC ARTICULAR OSTEITIS
OF THE KNEE JOINT.

8. Incoherent cries and "starting pains," occurring during sleep.

9. Tibia subluxated backward (partial) by muscular action.

10. General and local neural symptoms directly referable to the joint lesion.

11. Local temperature rarely lower than normal—almost always increased from $\frac{1}{2}^{\circ}$ to 3° .

12. Electrical contractility of leg and thigh, muscles reduced;—in many cases remarkably so, even in the early stage.

13. The reflex muscular spasm is not modified during sleep—nor does it yield to the ordinary doses of opium or chloral.—It will yield, however, wholly to the profound anæsthesia of ether or chloroform.

We will now consider the various points in this table as applied to the hysterical condition of the same articulation; first, however, calling attention to the fact that in certain conditions a hysterical *contracture* may exist, especially in adults, which more closely resembles the typical reflex spasm of chronic osteitis, than the emotional *contraction*, which I have attempted to describe. This *contracture* will be specially considered later.

1. Thickening over the joint may or may not be present; when present, it is very evidently confined to the cellular tissue only, and is generally accompanied by hyperæmia and hyperæsthetic areas, which latter are not, as a rule, con-

fined to the immediate region of the joint, or to points where tenderness should be developed by pressure either in synovitis or osteitis.

2. Atrophy from disuse only ; not the expressive wasting of chronic osteitis.

3, 4 and 5. The joint may possess even an abnormal degree of mobility, as in hysterical paralysis, but it will generally be found that motion is impeded at first by muscular action, which may either closely resemble the tetanoid spasm of osteitis, holding the joint absolutely rigid at a fixed point, as in Case 1, or it may permit joint movements, which are arrested just inside of the extremes of flexion or extension, as in Cases 2 and 3. In any event persistent effort, in the meantime diverting the patient's attention, will wholly overcome the muscular resistance. If the patient be examined on two or three occasions, the muscular conditions may be found variable, and certain movements which the patient will almost invariably resist under passive examination, will be voluntarily executed when the patient imagines himself unobserved.

6. Pain may be apparently very severe, and at points where it usually exists in osteitis. Generally, however, this pain is just as severe when the subcutaneous tissues are slightly pinched, as when firm pressure is made. In some instances pain can be developed at any point by simply directing the patient's attention to it. The oral expression of pain is wholly different in the hysterical condition from that which occurs in osteitis. In the former it partakes more of the *voluntary* character ; the latter is *involuntary*, and is accompanied by a facial expression which cannot be counterfeited.

7. There is always a limp if the limb is used at all. In many cases the fears of the patient, reinforced by the apprehensions of the physician, place the patient on crutches

or in a splint. The limp may closely resemble that of osteitis, or it may partake of the character imparted by congenital dislocation of the hip. If examined with care, however, there will always be found a sort of exaggeration about the gait, and in some cases the patient, under some stimulus, will involuntarily resume command of the hysterical muscles, and walk well for a few moments.

8. Sleep may be disturbed. In the majority of cases, it is normal. An incoherent cry, resembling that of osteitis, occurred at night in one of my cases, but it was evidently due to intestinal irritation. The "starting pains" do not occur in neuromimesis. *Consciousness* is necessary to form the group of symptoms which we are studying now.

9. The position of the limb is, as a rule, flexed—though I have seen it held in extreme extension—a position which Esmarch says is very frequent. At night, during sleep, the malposition may be, almost always, readily overcome.

10. In almost every case the patient will be found to be emotional to a greater or less degree, and there will exist some general or specific evidence of this condition in the history, conduct or appearance of the patient.

11. If the affected joint be hotter, a superficial hyperæmia exists. In Case 1 it did exist, and was apparently due to the counter irritants employed; and yet in Case 2, where counter irritants had been thoroughly used, the local temperature was 2° lower. In two other knee cases, not reported, there was a reduction of 2° in one and $1\frac{1}{2}^{\circ}$ in the other. The hyperæmia of neuromimesis, is apt to disappear and again reappear, while the temperature of an inflamed joint varies but little from day to day.

12. In the hysterical joint, the muscles retain their normal contractility, as tested with the faradic current. Even if the hysteric contraction has existed for a long time, the

faradic current shows little or no reduction either in the muscle or nerve currents.

13. A full dose of opium or chloral will cause the muscular contraction to yield, should it apparently resist in natural sleep.

From these facts it will be seen that all the important symptoms of disease of the knee joint may occur in a neuromimesis. But from a comparison of these differential statements we may draw the following conclusions regarding both the true and false knee joint conditions:

I. The neuromimetic condition resembles both the chronic inflammation of the synovial membrane and the bone. If it be remembered, however, that the changes which take place in chronic synovitis produce very few, if any, subjective symptoms, while the objective are prominent, as applied to the joint itself; and that the hysterical imitation presents a long train of both subjective and objective symptoms and signs, with the former in excess, but little difficulty will be experienced in making a differential diagnosis.

II. If the following conditions exist, a diagnosis of chronic osteitis of the knee-joint may be made with certainty:

1st. A muscular spasm, which cannot be overcome by persistent effort, while the patient's mind is diverted—a spasm that does not vary night or day, whether affecting motion in the extremes of flexion and extension only, or simulating an actual synostosis—a spasm which is not affected by the ordinary doses of opium or chloral, and which yields to profound anæsthesia only. 2dly. A markedly reduced faradic reaction of the muscles thus affected. 3dly. A localized and uniform rise of temperature over the affected articulation. 4thly. The presence of purely *involun-*

tary neural symptoms, as shown above, in the reflex muscular spasm, the starting pain, the osteitic cry, etc.

III. If the following conditions are found, a diagnosis of hysterical knee joint disease may be made with equal certainty: 1st. A variable muscular rigidity or contraction which can be overcome by mildly persistent effort, while the patient's mind is diverted, or which yields during natural sleep, or which wholly disappears under the usual doses of opium or chloral. 2dly. A normal reaction of these contracted muscles in response to the faradic current. 3dly. The absence of a rise of temperature, or especially the presence of a reduced temperature over the affected joint. 4thly. The presence of various emotional and semi-voluntary manifestations, which are variable and inconstant—the variability and inconstancy being due to the different conditions of the emotions, as affected principally by volition.

WE will now consider neuromimesis of hip-joint disease.

CASE 4.—Fanny A. is 15 years old, and lives in New York.

Hereditary history.—Father an epileptic; is an inmate of the Blackwell's Island Hospital for Epileptics, and "is fast becoming an idiot." Mother is healthy; the patient has one brother who is well; no sisters.

Patient is a plump girl; has a clear skin, and is not anæmic; is an inmate of a Home for Friendless Girls, and applied for relief at the Orthopædic Dispensary Aug. 3, 1875, accompanied by the matron of the Home. Six months previously, while in domestic service which required much running up and down stairs, she was attacked by a severe pain in the knee of the right leg, attended by a very perceptible limp. The pain soon involved the hip-joint, and finally the back. The pain was frequently urgent at night, and "the leg was drawn up and in" both night and day. There was no history of any direct injury to the affected limb or joint.

The patient applied at the dispensary during my summer vacation, and the following notes were made in the record book by the assistant surgeon who received the case:

"Condition of limb, adducted and slightly flexed; muscular

* Read before the New York Neurological Society, December 1, 1879.

rigidity and pain at thigh and knee ; flattening of natis and alteration of gluteo-femoral crease. Pressure through trochanters gives pain ; motion in any direction, especially adduction and abduction is resisted and gives pain. Pain on going up and down stairs ; pain at night ; limps badly ; slight concussion to heel causes apparently severe pain. Menstruation regular and normal. General condition of patient seems excellent ; she came into the room bearing almost her entire weight upon the arm of her attendant."

A diagnosis of hip disease was made by the assistant surgeon, and a note to that effect was sent to the managers of the "Home."

On August 16, 1876, the hip splint was applied. On the 20th the following record was made in the history book :

"Relieved of pain ; walks very nicely with the splint."

August 28th.—"Muscular rigidity still well marked."

September 11th.—"Doing well." September 15th.—"Examined to-day very carefully by the surgeon in charge, and hysterical symptoms established beyond doubt. Splint and appurtenances removed and patient ordered to walk home."

"The following conditions were present during the examination : Patient, under the instructions of the operator, voluntarily flexed, extended, abducted and adducted the limb normally. She resisted at first, but gradually yielded and permitted the operator to place the limb in the extreme positions mentioned above, including also all degrees of rotation and circumduction. Pain only on pressure over anterior superior spine and above crest of ilium. The patient walked away without apparatus, and with slight limp." No special treatment was adopted. She was ordered to use passive movements, a tonic was prescribed, and the case was kept under observation. On October 1st of the same year she went to Hastings-on-the-Hudson to fill the position of a domestic, wholly cured, and there was no return of the trouble even after the hard work incidental to her duties. She called at the dispensary during the past summer (1879) to consult me regarding a pain in the back, which proved to be a localized hyperæsthesia—a condition which did not exist during the previous treatment of her case. She told me that her limbs were equally strong, and that the ailing hip had given her no pain or uneasiness for many months.

Remarks.—The symptoms in this case were well calculated to deceive, and had the patient been "coached" by

an expert they could scarcely have been more closely simulated; and yet this girl had never seen a case of hip-joint disease, and knew no more of its symptoms than does a child of three years. If further confirmation was needed to sustain the correctness of the diagnosis, note the effect of the extension apparatus: "Relieved of pain, and walks very nicely with splint,"—its almost invariable effect in true, chronic coxitis. There was no disturbance of uterine function, no symptoms of spinal irritation, no hysterical convulsions, no particular emotional disturbance; but there was an indescribable something about the patient as she walked into the dispensary with the apparatus applied—as I first saw her—which suggested neuromimesis. There was the absence of the relation of cause and effect regarding her attitude and other expressions of her condition: a voluntary, and therefore irregular, effort to accommodate the one to the other, characteristic of the false as distinguished from the real disease, and the result of the examination fully confirmed my suspicion. The differential diagnosis turned principally on two points, viz.: the absence of the expressive atrophy of the thigh muscles and the absence of the *persistent character* of the reflex muscular spasm, which is an invariable symptom of chronic osteitis of the hip-joint. It was in this case that I first tested the thigh muscles with the faradic current, and found, as I have previously stated, a normal contractility.

It is worth while to call attention to the fact that in some cases of neuromimesis, as in this, the patient will express himself as greatly, perhaps almost wholly relieved after apparatus is applied; others wear their pads and straps so very tight that excoriations result, and insist that the appliances fail to give them comfort unless so worn—ignoring excoriations and other inconveniences which, in the true disease, often cause great uneasiness.

In other cases the apparatus is soon discarded, having produced no other effect than the trouble incident to its use, leaving the patient, apparently, much worse than when it was put on. I draw no distinction as to which class recovers the more quickly; the one just detailed made an exceptionally rapid recovery. I have now a case under observation, which was referred to by my friend, Dr. T. G. Thomas, where everything which could be suggested by the most eminent medical talent in the city was carried out in the treatment of a recognized hysterical paralysis of the right lower extremity, with only partial success. With apparatus the patient is now comfortable, and walks much better than before its use; but the question of complete recovery is one which the future only can decide.

CASE 5.—Miss E. O., aged 20, residence, Greenpoint, New York, applied for treatment at Orthopædic Dispensary, September 29, 1875.

The patient's parents are living and in good health; has two brothers and two sisters, all in good health, except one sister younger than herself, who has suffered from chronic, suppurative hip disease for eight years, and who has been under the immediate care of the dispensary for several years. There is, apparently, a good family history with this exception, and no disease of the nervous system is known in previous generations.

The patient has always been "a delicate girl." Menses first appeared at 14—very irregularly at first, but recently a great improvement has taken place in this respect. Is in apparently good physical condition, though somewhat pale.

Last winter (1874), she fell while stepping from a street car, and "hurt her hip," beside "cutting her elbow and knee." The patient walked home, however, with a decided limp. Soon after she "wrenched her hip" badly while rolling a barrel of flour. This last accident proved more serious than the former, the patient being unable to walk after the second injury to the joint. She was carried into the house and placed in bed, from which she did not move for three days. During this time she suffered much pain in and about the hip, and after again assuming the upright position she walked with "a bad limp," and required assistance in going

up and down stairs for several weeks. In the following spring (March) "pain in the back" appeared as an urgent symptom, the pain being located over sacro-iliac junction. The lameness and the pain were treated at home without success. In April she was seized with what the family physician called "neuralgia of the spine," and soon after hysterical convulsions appeared. Consultations were held, and "heart disease" and "tumor in the groin" were diagnosed. In this condition she went to Connecticut to visit a friend. While there she again "sprained her hip." This third injury to the hip joint was followed by an increase of the limping, pain in the back, hip and knee, and very restless nights. She returned to New York on September 25th, the symptoms being much aggravated by the journey. The pain in the knee became worse, sleep was very irregular and greatly disturbed, "the limb began to draw up," and the knee rested against the opposite thigh. Crutches were obtained, and with their use and the assistance of her mother the patient presented herself for examination.

I was about leaving the dispensary when the patient appeared. Having an engagement, I did not stop to make a careful examination, but taking into consideration her marked expressions of pain, both facial and oral, as I moved the limb while the patient stood before me upon crutches, her attitude, the rapidly repeated history of traumatism, and the apparent extreme disability and muscular rigidity of the hip joint and especially remembering that the patient's sister was under my care for morbus coxarius, I directed the house surgeon, Dr. George B. Packard, to apply a weight and pulley if manual traction should afford relief. The examination of the house surgeon is thus recorded:

"Patient pale and with anxious countenance; limbs very badly; a great deal of hyperæsthesia of back, especially in lumbar region; vertebral column very flexible; no prominence visible; great tenderness in inguinal region; excruciating pain and apparent reflex contraction on movement of joint; flexion and adduction of thigh; flattening of natis; gluteo-femoral crease lower and larger. *Traction relieves pain.* Patient entered ward, and weight and pulley applied."

October 1st.—“Relieved a little, but does not sleep well. Ordered morph. sulph. gr. $\frac{1}{4}$ at night. Does not get much relief from pulley; complains of pain in each hip. The symptoms are those of hysterical hip disease, and a diagnosis to this effect was made by the surgeon-in-charge.”

October 8th,—“Ordered a few drops of tint. of cinchona bark as a substitute for the $\frac{1}{4}$ gr. dose of morphine. The effect was the same as though morphine had been given. The condition is unmistakably a hysterical one, and patient was ordered to get out of bed and to attempt to walk. She walked with great difficulty, using a chair in place of crutches. The hip symptoms have subsided entirely, and are now centered in the knee joint, which has been held in extreme extension by the weight and pulley.”

October 20th.—“Discharged in the following condition: Hip symptoms wholly removed, but the knee is held firmly fixed in the position it may happen to assume after manipulation. Considerable pain in the knee, and patient walking very badly.”

December 2, 1876.—“The mother called to-day to report, and says she ‘is sure the doctors dislocated the knee joint while the patient was in the ward.’ This ‘dislocation’ was reduced in the following manner: ‘While rubbing the joint with a liniment, something suddenly snapped, and the following morning the patient could walk as well as ever before.’”

April 10, 1877.—“The patient called at the dispensary to-day with her sister’s hip splint, which needed repairs. She walks perfectly well. Sleeps well ‘with valerian once in a while.’ Has pain in hip and knee during easterly storms and after very long walks. No difference in size or length of limbs.”

Remarks.—All the symptoms in this case were very urgent, and I have never seen a closer imitation of the real disease. These symptoms were developed in a tolerably well-nourished girl, who had been the personal attendant of her afflicted sister for several years. This sister had passed through all the stages of a chronic, suppurative coxitis. The mimicry in this case is undoubted. The dread of the disease, of which she daily saw a very painful example, was sufficient, in her extremely sensitive condition, to develop the train of symptoms described, and which, at my first and superficial examination, deceived me. But when I again ex-

amined the patient, after the weight and pulley had been applied for two days, I found much the same condition of affairs as has been described in Case 4. When the first attempt to flex the thigh was made, the patient being in the supine position, an exaggerated expression of pain followed that would be difficult to describe, and the pelvis moved with the thigh as though an actual ankylosis existed at the hip joint. Next I held the pelvis firmly, and strove to overcome the flexion. The pelvis tilted forward, and the tubera ischii, resting on the mattress underneath, became the fulcra by which the lumbo-dorsal spine was alternately lordosed or kyphosed. Abduction of the thigh was next tested. But the pelvis moved with the femur upon the opposite acetabulum at the expense of the vertebral column. But I became convinced from various over-expressions of pain and exaggerated statements as to the effect of some simple tests, coupled with the history of hysterical convulsions, that a neuromimesis of hip disease was present. While the patient was looking in another direction, I made a persistent, but not forcible flexion, and after a few seconds of determined resistance the joint suddenly yielded. So it proved regarding the other movements, until, after a time, free passive motion of the articulation was permitted without pain.

The patient was in bed. Buck's extension was applied to the limb, and the question arose: What shall be done? It was deemed best to continue the traction for a few days. This was done, and the patient then was *permitted* to get up. As mentioned in the notes, all the hip symptoms disappeared under this treatment, and the trouble concentrated about the knee joint; and this complication did not yield prior to the discharge of the patient. The manner in which recovery was effected is very suggestive of the methods employed by the professional "bone-setters."

CASE 6. Charlotte K., aged 12 : admitted to St. Luke's Hospital, May 13, 1879.

A portion of my own notes of this case have been mislaid and I am indebted to my friend, Dr. Robert Abbe for the following memoranda made by him when the patient entered the hospital.

Patient enters hospital in excellent general condition but complaining of much pain about the right hip on walking or sitting down. She has a marked limp and drops on that side when walking ; she gives a history of having been injured on that side eight years ago, with pains and limping ever since. On examination there is :

1. Shortening three-eighths of an inch by measurement of limbs.
2. Atrophy of solid tissues, the right thigh and calf being one-fourth inch less in circumference than the left.
3. The natal fold on the right side is higher and deeper—the buttock slightly flattened.
4. The inguinal fold is drawn up on the right side and the genital fissure considerably drawn to the affected side.
5. Pain about the inguinal region and iliac fossa ; likewise pain in pinching up the skin anywhere on either thigh or leg.
6. Some adduction and a little flexion of thigh on abdomen.
7. The patient refuses to flex thigh on abdomen when lying down, or to allow much flexion of it.
8. There is rigidity of all the muscles of the affected thigh.

Points on which an exclusive diagnosis was made.

1. The emotional element in the child ; easily affected to tears, without pain. She seemed also very conscious of observation and suspicious of it.
2. The rigidity of muscles of thigh is variable, as when attention is directed thereto or diverted therefrom, etc.
3. The flexion of thigh which occurs when patient sits in a chair cannot be obtained when she lies down.
4. Patient can put on her own shoes and stockings.
5. She attributes disease to and dates back her trouble from an injury eight years ago.
6. There is more or less hyperæsthetic pain at most any point of opposite leg, or any part of body when pinched or touched.

7. Uniform temperature ; no evidence of suppuration ; good appetite ; good general condition.

8. Psoas muscle was not involved in the contraction.

In a letter recently received from Dr. Abbe, he also says :

“ The child, when not conscious of observation was occasionally seen when playing with other children, to jump down from buttress of the front steps of the hospital—a distance of three feet, and to run off without evidence of pain. She was also, on one occasion, taken off her guard by an offer of money with which to buy peanuts from a passing vendor and momentarily developed an unexpected freedom of action about the hip joint.”

This case came into my service at the hospital with a diagnosis of hip joint disease, and Dr. Abbe has described symptoms upon which such a diagnosis might easily be made, but the condition of the patient and the elements of the exclusive diagnosis are so plainly stated in the notes that extended comment seems unnecessary. In this as in the preceding case, the extremely variable character of the muscular contraction was the turning point in diagnosis ; a wide difference existed between the symptoms developed at the formal examination and those shown by the patient when she thought herself unobserved.

I may mention one other point which would be of value were the elements of diagnosis more confusing ; *i.e.*, the atrophy. It was the same at both leg and thigh. In true joint disease of several years' standing, the atrophy of the thigh is far in excess of that of the leg. I have made and recorded several hundred observations on this point and find such to be uniformly the case. The shortening of three-eighths of an inch was undoubtedly congenital. This patient recovered under the treatment pursued in the other cases reported, and left the hospital in a few weeks.

CASE 7. D. P., æt. 10. Residence, N. Y. State.

This patient applied to me on September 10, 1876, suffering

from all the important and many of the urgent symptoms of hip disease—left side. The hereditary history, as related by her mother, was not very satisfactory, as nothing definite could be learned, other than the fact that the child's father was dead, and that "all the rest of the family were healthy."

The symptoms from which the patient suffered had been of insidious growth. She first commenced to limp, shortly after an injury to the hip. The limp had been followed by pain, though, the mother states that the pain followed so soon, as to be almost coincidental with the limping. The pain was in the thigh, knee and hip, the patient passed through some sleepless nights, and gradually the limb had become "very weak and deformed." The limp and pain became so much worse that crutches were used. The patient used these crutches as she came into my office—with a diagnosis of hip disease, and a letter of introduction from a prominent surgeon of one of the Hudson River counties.

It was with great difficulty that the patient was persuaded to lie down upon a lounge for examination. After many efforts and a great many suggestions from the mother, the patient was finally placed in the supine position, the mother, in the mean time, making what seemed to be manual traction with a degree of force that indicated long practice. The patient, all this time, was shrieking with pain, and grasping the furniture near at hand, apparently as a means of counter-traction. I imagined that the case was one of chronic osteitis of the hip joint, in the stage of exacerbation. After much persuasion I, at last, induced the mother to permit me to make the traction and control the limb. I then commenced to gently test the condition of the joint, as regards motion. While manipulating in the mildest manner, I was startled by an urgent cry from the patient, and an imperative command, "hold it tighter," two or three times repeated. I was already making all the traction possible, and naturally asked an explanation. The mother hurriedly said "you don't squeeze the ankle tightly enough." This threw a new light on the symptoms. Desisting wholly from all efforts at traction, I merely compressed the ankle joint with all my power. While doing this I could place the thigh in any position, and could even press the articular surfaces together without resistance or complaint.

Still "squeezing the ankle," I was able to get the patient in the upright position with little or no trouble. Without any support but that afforded by her crutches, the thigh became flexed and ad-

ducted. The whole limb was visibly, though not markedly atrophied. There were various hyperæsthetic areas on the affected limb—principally on the inner aspect of the thigh—and over the crest of the ilium. Pain was produced by pressure through the trochanters, by crowding the sacro-iliac surfaces together, and by digital compression in the inguinal region. The patient stated absolutely that she could not walk without support. There was normal faradic contractility of the leg and thigh muscles.

I informed the mother that her child did not have hip disease—and advised the same course of treatment that had been successfully pursued in other cases. My diagnosis was not well received. The mother openly declared that she preferred Dr. —'s opinion to my own.

I had almost forgotten about the case when, one day, in passing through my ward at St. Luke's, I again met my former patient, still upon crutches, and still suffering from "hip disease,"—under which diagnosis she entered the hospital. It seems that the mother of the patient had wholly disregarded my advice, and had consulted a prominent surgeon of this city, who, after a careful examination, had diagnosed coxitis, and had said I "had made a great error." The especial attention of the house staff was called to the patient and my friend, Dr. G. A. Spalding made the following notes of the case, which he has kindly given me.

1. Patient entered hospital on October 30, 1876, using crutches, and refusing to stand upon, or use her left limb, in any way.
2. Thigh flexed and adducted. The attitude and position of limb were characteristic of hip disease.
3. Very marked expression of pain on passive motion of joint—principally at the knee.
4. Joint motion limited in every direction at first. It became almost normal when persistent effort was made while patient's attention was diverted. Apparent atrophy of thigh and leg muscles.
5. Patient very restless at night. She had used morphine prior to entrance to hospital.
6. When patient was under observation she complained much more than when she imagined herself unobserved.

7. *Traction relieved pain*, and apparently rendered patient more comfortable.

The peculiarity manifested when I first examined the limb, viz.: the preference for a squeezing sensation at the ankle had become greatly modified. The patient was now relieved by direct traction only.

The treatment pursued consisted in the removal of the crutches, passive movements, with cod liver oil and ferruginous tonics. She improved very rapidly and on December 20, 1876, she left the hospital without any evidences of hip disease. The subsequent career of this patient is thus described by Dr. Spalding in a letter to me :

“On Feb. 19, 1877, about two months after her discharge, her mother again presented the patient for admission to the hospital, giving the following history : A few weeks previous she had been seized with convulsions. These convulsions, the mother stated, were becoming more and more frequent and alarming—as many as three or four occurring in twenty-four hours. As the mother gave this history, she was occupied in unrolling a large bundle, which proved to be a blanket. This she spread carefully upon the floor, remarking that the hour for one of these attacks had arrived, and that it was her custom to put the blanket down as a protective. Precisely at 11 o'clock A. M. the patient composed herself comfortably upon the blanket, and passed into one of the most characteristic hysterical convulsions I have ever witnessed. The subsequent history is very brief and most satisfactory. The usual remedies lessened the frequency and shortened the duration of these attacks. But an absolute cure was not effected until later. I chanced to be in the ward one day at the time the patient was seized with a convulsion, and happening to see a siphon of carbonic acid water, I picked it up and holding the young girl firmly by the back hair I discharged the contents of the siphon down her throat. Her convulsive movements were instantly checked, and she promised to avoid all such conduct in the future. She kept her word, and in a few weeks was discharged from the hospital. During all this time the patient had no recurrence of the hip joint manifestations.”

Remarks.—The hysterical diathesis was well demonstrated

in this case, as Dr. Spalding's experience proves ; and my own experience shows, as I have remarked in other cases, that a diagnosis of "hysteria," be it qualified by ever so many Greek names, is very apt to produce a not very pleasant impression, so far as the patient and her friends are concerned.

We observe also in this case the change in the symptoms, as relating to traction of the joint. When I first examined the patient, I explained to the mother, in presence of the child, that in true joint disease traction afforded relief, and that simply "squeezing of the limb" would not produce any effect upon true joint symptoms. When the patient entered St. Luke's she was fully prepared upon this point, and I have no doubt that this information assisted in deceiving the next examiner.

We are assisted in our study of knee joint lesions by many favoring circumstances. We can detect by inspection alone any considerable change in the outline of the articulation. We can discover, oftentimes without the thermometer, a rise of temperature, due to intra-articular changes. Palpation is of great service, and the appearance of the superficial tissues is frequently of material assistance. But in considering the differential diagnosis of hip joint lesions in the first stage, we cannot rely with the same certainty upon any one of these diagnostic aids. Inspection shows us a flattened natis, a deformed position, an altered gluteo-femoral crease, etc., all of which may arise from a variety of causes. The surface thermometer is rarely of service. The joint is too remote from the surface to make palpation available, in the first stage of the disease, in the great majority of cases, and the appearance of the superficial tissues is not of special diagnostic value. Our means of objective diagnosis are therefore limited at the hip, and we are obliged to depend upon a closer analysis of the symptoms, especially the subjective.

Bearing these facts in mind, and recalling the essential points developed in our study of the true and false lesions of the knee, especially as applied to chronic osteitis and neuromimesis, we may summarize our observations upon these same points as applied to the hip as follows:

In chronic osteitis of the hip* there exists, among others, the following symptoms:

1. *A limp*, which forms in the large percentage of cases the first symptom noticed,—a limp which is not expressive of fatigue,—which is more apparent after rest than after exercise, and which usually increases until the patient is unable to bear any weight upon the affected joint.

2. *Pain*. This symptom rarely antedates the limp, but may appear simultaneously. Generally it follows the limp after many weeks, sometimes months. The pain is usually referred to the knee, and is very frequently described as presenting at some point remote from the hip.

3. *A state of apprehension* regarding joint movements, difficult to describe. This apprehensive state always attends the pain, and frequently antedates its oral expression. It is almost invariably developed by passive motion if pushed beyond the point of muscular resistance, and is plainly demonstrated by some particular form of forcible movement—by concussion in some, by quickly rotating the thigh in others, etc.

4. *Muscular spasm*. This exists always as a symptom of chronic osteitis of the hip joint, though its existence might easily be overlooked in the early stage of the disease by a careless observer. In this early stage, the one most likely to be confounded with neuromimesis, this spasm of

* Chronic synovitis of the hip joint, is, probably, of rare occurrence, and is not easily diagnosed. See the author's Clinical Lecture on the "Etiology and Pathology of Chronic Joint Disease," pp. 18 and 34, and remarks in "Pott's Disease, Its Pathology and Mechanical Treatment," by the author, p. 25 et seq. See also remarks by V. P. Gibney, M.D., in Article, "Dislocation of the Hip in Children."—*Amer. Jour. Med. Sciences*, Oct., 1879.

the muscle is perceptible in the extremes of flexion and extension, and it is especially noticeable when, with the patient in the prone position and the pelvis firmly held, the flexed leg is used as the long arm of a lever to make rotation of the thigh *outward*. This muscular spasm increases, as a rule, with the limp, but many months, or even years, may pass before it reaches the point where all movement of the joint is arrested; and cases may occur where the spasm simulates actual ankylosis, and yet there may be a very slight limp only, and no oral expression of pain.

5. *A progressive muscular atrophy* of the muscles thus affected as shown, as has been already mentioned, by comparative measurements and the electrical test.

It will not be necessary to mention further points. They have been fully considered and discussed in our consideration of the knee joint conditions.

In the neuromimesis of hip disease these symptoms present the following phases:

1. The limp is variable and suggests fatigue. The expressive conservative element so apparent in hip disease is lacking. This variable, tired limping is, as a rule, much better after rest, and is often absent in the morning after sleep. It almost invariably follows the pain, though in Case 7 it did not.

2. Pain is usually the first symptom, and it is found most generally in the immediate region of the joint—for example, over the iliac crest, or anterior superior spine. The hyperæsthetic character of this pain is easily demonstrated as a rule.

3. In place of an apprehensive state, in response to the tests applied, will be found a series of symptoms which are erratic and inconstant.

4. A condition of muscular rigidity often exists, but, unlike the true muscular spasm, it can, in most cases, be overcome in the manner before stated.

5. A very perceptible degree of atrophy may exist, such however, as would, arise from inertia only. A normal electrical contractility exists in all the muscles of the thigh.

The conclusions reached in our study of the knee joint lesions apply with equal force to the hip joint, local temperature alone excepted.

Cases sometimes occur where actual hip joint symptoms exist, associated with undoubted hysterical manifestations. If the former are not urgent, and the latter very evident, the difficulty of making a correct diagnosis is very great. The danger lies in ignoring the obscure, but real, and attaching a too great importance to the false. Such a case occurred in my own experience, and may be briefly related.

CASE 8.—Miss A. S., a young lady residing in Brooklyn, of healthy parentage and with a good early history, passed through the ordinary symptoms of the first stage of hip disease, and came under my care in 1875. After a thorough mechanical treatment, covering about one year, all the symptoms of the joint lesion subsided, and in consultation with the family physician, Dr. A. W. Catlin, it was decided to remove the splint. This was done, and the patient walked without any limp, except that which would be expected from the disuse and confinement of the limb.

Soon after the removal of the splint, however, various typical hysterical symptoms manifested themselves, and hyperæsthetic areas developed in various portions of the affected limb, and especially over the crest of the ilium, the lumbar spine, the sacro-iliac synchondrosis, and the outer portion of the thigh. There were other symptoms, also hysterical, which developed at the knee joint, and the emotional condition of the patient became very apparent. All of these pointed to a neuromimetic state. While in this condition, which existed for some weeks, the patient began to limp slightly, but the joint motions were, as before, nearly normal. The involuntary symptoms, especially the nocturnal ones, were absent. The fact that there was a slight decrease in the resistance to joint motion as the limp still became more apparent, was noted. Still the limp increased, and so did the emotional symptoms. The limp became still more pronounced, but the other joint symptoms did not keep pace with the debility of the

limb, while the hysterical were very prominent. This condition remained for a time, when the apparent urgency of some of the subjective symptoms led me to suspect that the emotional symptoms were secondary to a relapse or coincidental with it, I asked Dr. E. C. Seguin to see the patient, and in a consultation, at which Dr. A. W. Catlin was present, it was decided that the symptoms warranted protection to the joint. Accordingly, the splint was again applied, with relief to all the symptoms, the hysterical as well as those which were, as the result proved, real, for the formation of an abscess at the end of about six months proved the correctness of Dr. Seguin's opinion. The case has done well ever since.

The insidious progress of *caries sicca* of the articulations in the first stage, might easily suggest neuromimesis, or some other lesion of the nervous system, as it did in the case which Esmarch reports, and to which reference has already been made. In *caries sicca* of the hip joint there exists, when the disease first manifests itself, a limp, which is so slight as to be scarcely noted,—very slight resistance to extreme joint movements, and an indefinite expression of pain; sometimes no oral expression of pain at all. After these symptoms have existed for a time, they may wholly disappear for several weeks. When they again return, they are a little worse, and generally follow some slight twist or injury to the joint. A total remission of the symptoms may occur several times. In the child these symptoms are generally referred to "growing pains," "habit," etc., and in the adult it has frequently been called "rheumatism," "sciatica," "hysteria," or even in one case "malaria." I could relate many cases of this character did space permit. I can only refer in these general terms to this, the serious side of the question, for the error of diagnosing a joint lesion, when a neuromimesis exists, is as nothing compared with the evil consequences, the deformity, and death, which have resulted from mistaking a progressive and serious hip joint lesion for "sciatica" or "rheumatism."

I have seen a large number of cases of simulated diseases of the spine, from the histories of which I select the following as affording the most instruction.

CASE 9.—Miss —, aged 14 years, residence, New York State, was seen in consultation September 28, 1879.

The history shows that the patient has always been a strong child. She is one of six children, three of whom are now living, one having died in early infancy, one of diphtheria, and a third of convulsions following measles. Two of the survivors have had convulsions. The patient has had rheumatic pains at various times in shoulders, hips and knees, which were, however, of but a few hours' duration.

The hereditary history shows phthisis on mother's side, one case of Pott's disease in a very remote branch of the family, and on the father's side, gout.

There was no trouble with the patient's back until five years ago, about which time, riding down hill in a little wagon, she fell therefrom, striking the lower part of her spine upon a stone. She was able to walk, however, and went to her room. A "black and blue" spot appeared at about the last lumbar vertebra; she was rubbed with liniments, kept quiet for a few days, recovered perfectly and remained entirely well for three years. Two years ago, when about twelve years of age, she began to ride on horseback, and became particularly active and venturesome. One day after a long ride she complained of her back, and the family physician was summoned. He thought "the muscles were strained." Iodine was applied, and rest prescribed in the recumbent position for a few days. Again recovery was complete, and the young girl was as active as before, except that the horseback rides were discontinued for about three months, when her father bought for her use a Shetland pony. He "bolted" one day and threw the girl over his head, again injuring the spine, which was treated as before with iodine and rest. But on this occasion other symptoms supervened. Practice at the piano tired her: "her back would ache between the shoulders." Practice was dropped. She became nervous and irritable; was very tired after slight exertion; desired to support her head when sitting down, and the spine became tender at various points. In this state of affairs the mother's attention was called to a case of Pott's disease in a dis-

tant relative. She became very anxious about her daughter, who became very anxious about herself. The tender spots along the spine became more tender, the spinal ache was more marked. The family physician admitted he was in doubt as to the condition of the spine, and the case was sent to a prominent surgeon of this city for advice. A diagnosis of Pott's disease at the last lumbar vertebra was made; the patient was placed on her back for three weeks, leeches and ice were applied to the spine, and she was then encased in a plaster jacket, after suspension, the operation being repeated five or six times in fifteen months, each time with relief. After the removal of the last jacket, however, the symptoms became worse, and the patient, naturally enough, objected to its renewal during the Summer. Her mother, in the meantime, had kept the patient very quiet, waiting for the cooler weather. When the patient applied to me for advice, the mother remarked that her daughter's symptoms were worse than ever before, and a fear existed that a relapse had occurred.

Examination.—Several hyperæsthetic spots over the spine, chiefly in the region of the 12th dorsal and 1st lumbar vertebræ; the pain, however, when present, was lower down, near the sacrum, and it had always been of a superficial character, the friction of her underclothing at the tender points hurting her more than the surgeon did by pressure when examining the parts. There was no pain or history of pain in the abdomen, thighs or pelvis. Careful examination showed normal flexibility of the spine in all directions, and there was no muscular resistance when the psoas and iliacus were put upon the stretch, with patient in the prone position and pelvis firmly held.

The spinal deformity showed itself principally in a marked ex-curved, a slight drooping of the right shoulder and some lateral deviation. Lower extremities of equal length. All traces of deformity disappeared in the prone position.

Patient very evidently an emotional girl of active mind and of tolerably full habit. There is no evidence about her—in gait, attitude, or expression—indicative of Pott's disease.

A diagnosis of neuromimesis was made, and the patient was told, much to her surprise, that no apparatus was required. She was instructed to resume her equestrian exercise, and to do, in short, the same as other girls of her age in such matters. A letter recently received states that my diagnosis has been fully confirmed.

It seems scarcely necessary to comment on this case, and

I would not make extended comment had not the error in diagnosis been committed by one whose opinion in such matters is generally accepted as authoritative.

1st. It has been stated again and again by various writers that superficial tenderness over the vertebræ is indicative of disease of the spine—a statement which other writers contradict.* The truth is that this localized tenderness does exist in many cases of true vertebral caries, but it is frequently developed by the surgeon at his examination, and has no real connection with the lesion. There is this difference between the tenderness of the sub-cutaneous tissues in Pott's disease and the hyperæsthesia of neuro-mimesis. In the former it is rarely made the subject of complaint by the patient, and, as before stated, is often developed by the surgeon at his examination—while in the latter condition it is one of the very first of which the patient speaks. The neuromimetic fastens on any abnormal sign—often of the most trivial character and exaggerates its importance; the victim of Pott's disease has enough to engage his attention without searching for superficial tender spots.

2d. It may be safely asserted that perfectly normal move-

* For example: C. B. Radcliffe, M.D., F. R. C. P., in Reynold's System of Medicine (vol. ii, p. 718, Article, "Caries of the Vertebral Column,") describes among other symptoms of this disease "a feeling of undue heat, or even burning in the weak and painful and prominent part, which is not felt in other parts of the spine, when a sponge soaked in moderately hot water is passed down the spine—a state of tenderness on pressure or concussion, which is equally restricted to the same weak and painful and prominent part." On the other hand, Skey, in the valuable work already quoted, (p. 56), deals thus forcibly with these symptoms: "Of all the fallacies that cling to professional practice, of all the false doctrines which the pardonable ignorance of a former generation has entailed on modern surgery, none can surpass that which affects to detect a carious disease of the body of a vertebra by drawing the fingers down the spine." Again, p. 55, he says: "Fifty or sixty years ago, a provincial surgeon of some note recommended the application of a hot sponge to the spine with a view to detect disease of the bodies of the vertebræ—there was some excuse for ignorance then—there is none now." My own experience leads me to wish that Skey's statements might find a place in every work on surgery. The frequency with which one hears the remark "There is tenderness over the vertebræ," proves that faith in this symptom as diagnostic of vertebral caries is still widespread. In true disease it has no significance whatever as a symptom of actual disease of the bone.

ments of the spine are incompatible with the existence of Pott's disease. Such flexibility existed in this case, and the incorrect diagnosis could only be made by giving undue value to some of the more prominent symptoms presenting. Even in those cases of neuromimesis where a certain degree of spinal rigidity exists, it will generally be found, as in the cases of joint disease I have described, that a persistent effort—not a forcible one—will overcome it. Nor must we mistake the acute and the sub-acute muscular affections for the reflex muscular spasm of chronic spondylitis. I have seen some cases, especially in the cervical region where a differential diagnosis was difficult, but in a great majority of neuromimetic spines you will find muscular lassitude rather than muscular rigidity: inability to hold the spine erect and a flexible excurvation rather than an alert muscular spasm which assists in protecting the diseased parts from concussion and aids in forming the compensatory, antero-posterior curves which are such a striking feature of caries of the vertebræ when deformity exists.

CASE 10. Miss M. A., æt. 14. Resides in N.Y. State. The hereditary history of this patient is very suggestive: two of her grandparents—one on either side—had paralysis agitans: her maternal grandmother died of phthisis, a tendency to which exists in this branch of the family, two of her aunts dying therefrom, and her father's family are subject to chorea. Two of the patient's brothers have died of "brain disease," and a sister is "very nervous."

As a child the patient was "very quick and nervous," of active mind, and had no serious illness up to the age of eleven years. She seemed prone to assume responsibilities beyond her years, and sought the society of adults, and has always been a very affectionate and emotional girl. Three years prior to my examination of the case, she developed symptoms of a strongly emotional character which affected "principally the back." She had very severe pains in the dorsal region which prevented any movement of this part for several weeks. This was followed by several typical hysterical symptoms. While recovering from this condition, her little brother removed a chair upon which she was about to sit,

and she received a severe concussion of the spine. The symptoms of trouble in the back now became very urgent : any movement of the vertebral column produced pain which, at times, seemed to encircle the body and frequently found its most marked expression in the abdomen and chest. The spine began to "project backward and twist sideways," and any jar or movement increased the pain greatly. The recumbent position was the only one she could tolerate, and she had kept it for many months prior to my examination.

Residing 400 miles from the city, she was brought here in a specially prepared compartment of a sleeping car, and was conveyed to her hotel on cushions. A diagnosis of Pott's disease had been made by the family physician, and strict injunctions had been given to avoid any shock or jar to the patient.

On examination I found a very marked excurvation of the spine which, however, immediately disappeared in the prone position, and a lateral deviation which yielded easily to manual pressure. The right scapula was lower and more prominent than the left. There were various points of tenderness over the spinous processes. Patient was unable to stand alone. Pain existed not only posteriorly, but anteriorly also—like the "gastralgia" of chronic spondylitis. There was no muscular rigidity, the vertebral column being normally flexible in all directions. There was no contraction of the psoas muscles, and the strictly involuntary symptoms which accompany true, chronic spondylitis were absent.

Good authorities tell us that pain on concussion of the spine, especially if accompanied by pain in the anterior part of the thorax, indicates Pott's disease, and it is certain that in typical cases these symptoms do exist. In this case they formed the prominent subjective symptoms, and if taken alone would be very apt to mislead. There was also a posterior curvature accompanied by lateral deviation, which latter not unfrequently occurs with the kyphos of Pott's disease. But the kyphosis, as well as the scoliosis, was easily removed, and instead of the ever present muscular rigidity of chronic spondylitis, was found a normal degree of flexibility of the spinal column.

A diagnosis of neuromimesis was not well received. The

mother of the patient expressed herself as disinclined to accept it, so positive was she that disease existed. After some hesitation it was finally decided to follow my advice, which was simply to ignore the pain and the deformity and to accustom the patient to gradually progressive exercises. A tonic treatment was also advised. After three weeks the patient was able to walk, and after six weeks she went home suffering little or no pain. Progress after her return was gratifying. Recovery was complete without relapse.

The prominent symptoms of chronic spondylitis, before the appearance of the characteristic deformity, may be briefly described as follows :

1st. Rigidity of the vertebral column at the point of disease, this rigidity being, in a great measure, due to the persistent reflex muscular spasm which has already been described as occurring in chronic osteitis of the knee and hip.

2d. Pain, which, like the pain of hip or knee-joint disease, may find expression orally, or give evidence of its existence by the apprehensive state already referred to. When the patient locates the pain, he generally describes it as occurring in the region to which the spinal nerves of the diseased region are distributed. The pain is aggravated by any sudden motion or unexpected jar. The same kind of involuntary symptoms, the nocturnal cry, etc., are found in many cases of chronic spondylitis in the prodromal stage. In some cases the disease progresses so insidiously that the actual deformity is the first symptom noted by careless observers.

3d. A characteristic attitude and gait, which are imparted, partly by the unremitting reflex spasm (which frequently obliterates the normal curves of the spine), and partly by the instinctive effort of the patient to avoid concussion or shock to the diseased surfaces.

I do not doubt that the same muscular atrophy occurs in chronic spondylitis that is found in chronic epiphysitis of

the knee and hip. The difficulty of demonstrating it in certain muscles is apparent.

In neuromimesis of chronic spondylitis the pain is generally superficial, and is, almost always, located over or near the spinous processes; it is sometimes transient, and frequently changes its location from time to time. In Case 10 the pain appeared on the anterior surface of the body, but disappeared under the curative effect of exercise. In place of the reflex muscular spasm, which holds the vertebral column so rigidly in chronic spondylitis, and which prevents the reduction of the kyphos, there is generally found as before stated, a normal degree of mobility of the spinal column under properly directed manipulations. There is no nocturnal cry, and the facial expression of apprehension, which is generally marked in the sufferer from Pott's disease, is so far wanting that the expression of many neuromimetic patients is even merry.

The general conclusions reached regarding the knee joint are as applicable to the spine as to the hip, excepting those, of course, which pertain exclusively to the knee as a distinct articulation.

If we recall the symptoms presented by the two cases of simulated chronic spondylitis which have just been related, it would appear that the danger of diagnosing true *lateral curvature of the spine* in similar cases would be great. Each of these patients presented a distinct lateral spinal curvature, accompanied by a malposition of the scapulæ, and these symptoms also occur in true scoliosis. Indeed, cases of nervous mimicry of true, rotary, lateral curvature are very frequent, and, inasmuch as the mimicry is often very close, we should, in suspicious cases, be very careful in our analysis of the symptoms presented. Fortunately, the error of calling a hysterical spine a true lateral curvature is not so likely to be followed by serious results, as is that of

attributing to "habit" or "hysteria" the progressive curvature of true scoliosis, than which there is nothing in the whole range of orthopædic surgery more insidious in its onset, or, when it is fairly established, more difficult to arrest, even by means of the rejuvenated gallows, and the much lauded plaster of Paris bandage.

The almost constant association of emotional symptoms, of greater or less intensity, with the condition of true, rotary, lateral curvature, has led many to suppose that the former was, in some unexplained way, a factor in the production of the formidable conditions met with in the latter. My own experience leads me to say, while recognizing the fact that the majority of cases of true scoliosis are found in emotional girls, and that mental activity is its frequent attendant, that I am no more prepared to admit that this emotional state, or mental activity is the cause, or even a cause of true scoliosis than is the oft-noted precocity of strumous children a factor in the production of chronic joint disease. In either condition the emotional state, on the one hand, or the precocity on the other, is symptomatic of the general condition.

In true lateral curvature the dorsal curve presents to the left more frequently than is generally supposed, and in my own experience it occurs in males oftener than has been stated. Of 83 consecutive cases, occurring at the Orthopædic Dispensary and Hospital, 21, or 34 per cent. presented a left dorsal curvature, and 18, or 27½ per cent. were males. Adding to this the fact, which I deduce from the examination of several hundred patients, that in no two cases do we find exactly the same curves, and that it is exceptional, in a group of cases, to see the same number of vertebræ involved in the primary (dorsal) curvature, and we reach the conclusion that we must look for our primary muscular factor, in the production of true lateral curvature,

to the, strictly speaking, intervertebral muscles, rather than to those which, taking their origin at some other part of the skeleton, have their insertion in the flexible vertebral column. I cannot stop here to enter at large into the field which this conclusion opens. My study of neuromimesis of lateral curvature has assisted largely in reaching this conclusion, which is secondary to other conclusions that are stated in my monograph on Pott's disease, already alluded to. I hope soon to be able to especially consider these and other interesting points in the etiology of lateral curvature, and regret that the time allotted me forbids my doing it on this occasion.

The fact that lateral curvature was very frequently accompanied by hysterical manifestation, is mentioned by Laycock. In his valuable treatise* he ascribes lateral curvature to "hysterical paralysis," and mentions the opinion of Stromeyer that the *serratus magnus* is involved in the production of the curvature, a view which has since been entertained by other writers. But there is this difference between the lateral curvature of hysterical origin and true scoliosis. The former partakes of the character of *functional weakness*, especially of those muscles which act upon the spinal column extrinsically, while the latter is due to a progressive muscular contraction, dependent upon causes yet to be pathologically ascertained, but which appear to primarily affect those muscles which act intrinsically. The hysterical form does not become true scoliosis, in my own experience, unless the specific, pathological cause be added, and we may, perhaps, infer that this specific cause is more apt to be developed in the hysterical diathesis, just as we may say that chronic joint disease is more apt to occur in the strumous diathesis. Whatever the pathological condition may be, that induces the peculiar condition known as

* An Essay on Hysteria. By Thomas Laycock, Philadelphia, 1840.

rotary lateral curvature, we at least know that the muscular contraction is both a painless and a progressive one, and that it resembles in character that found in true torticollis, in congenital club-foot, and, in many instances, in infantile paralysis. The conditions found in true torticollis, especially resemble those which are apparent in true lateral curvature, and that this condition is one of *contracture* rather than simple contraction, is confirmed by Paget, who says, in speaking of neuromimesis of lateral curvature: "If these signs of distinction are not enough, ether or chloroform will help. You can straighten the mimic curvature when the muscles cannot act; you cannot so straighten a real curvature."*

Recognizing then the character and persistency of this contracture, it is always a matter of difficulty—if it is not an impossibility, in the absence of symptoms in the earliest stage—to determine just when the efficient cause of the progressive scoliosis commences to operate. When the spine is markedly curved, and rotation is apparent, the diagnosis is not difficult, and while the tendency of true scoliosis is to become very slowly worse, and to result in irremediable deformity, the hysterical curvature, if properly treated, sooner or later recovers, just as do the emotional contractions of the hip or knee.

The early stage of hysterical lateral curvature, and the first (apparent) stage of true scoliosis, however, present many features in common, and as before mentioned, the emotional element is almost uniformly present in each. This adds to the difficulty of diagnosis—and has led to many errors. For instance, a young girl applies for advice. The early history presents no remarkable features. She has always been well—but not rugged—has grown rapidly, and has become, of late, somewhat nervous and easily excited.

* Op. cit., page 229.

The disturbed muscular action, whatever be its cause, does its work painlessly, but none the less surely.

Rotation of the vertebræ is described by Barwell, Adams, and others as occurring very early in the history of true scoliosis. My own experience confirms this, and its value as a diagnostic sign in the first stage is very great. In my own experience also the first (apparent) stage of true scoliosis is always accompanied by a modification of the lateral flexibility of the vertebral column, in the dorsal region, while in the neuromimetic state, this modification does not exist. The loss of symmetry between the scapulæ in true scoliosis depends, mostly, upon the acquired position of the ribs, and in the mimic state, there is a simple debility of the scapular muscles, without any change in the ribs whatever.* In the simulated state there is generally an excurvated spine with a lateral deviation, while in true scoliosis the curvature is lateral wholly, with compensatory or double curves. And these facts enable us to mention the symptoms, which when found, render the diagnosis of lateral curvature certain, viz., rotation of the vertebræ, and marked resistance to lateral flexion on that side toward which the convexity of the dorsal curve looks.

Another point is this: Like the symptomatic lateral curvature found in chronic coxitis, or which arises from any cause which affects the transverse pelvic plane, the neuromimetic spine becomes straightened, and the scapulæ assume their normal relations when the patient is placed in the prone position. Absolute rest of the long, extrinsic muscles of the vertebral column is all that is necessary to restore the parts to their normal position. After very evident rotation and marked lateral resistance are met with, recumbency fails to wholly annul the curvature, though in

* Paget remarks "the vertebræ are little or not at all rotated, as they are in well-marked cases."—Op. cit., p. 229.

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removing the contributive cause of gravity, which acts vertically when the patient sits or stands, the position of the shoulder blades and the curvature itself becomes considerably modified.

But if, after examining a patient carefully, making accurate notes of your observations, you should still fail to reach a satisfactory conclusion, it may be deemed advisable to ask another examination at an early day. If during the interim any marked change in the symptoms occur, the evidence is strongly in favor of neuromimesis. There is "no alternation of increase or remission" in the muscular conditions, or the deformity, in true scoliosis. The shoulder blade does not change its position from day to day. The curvature and the rotation progress slowly, obeying the mandates of the incessant muscular contraction, but so slowly, that weeks may elapse without presenting any external change that the eye could appreciate. In the mimic state various and sometimes very marked changes occur in a few days. And if we find that these variations are not associated with the permanent features of the true scoliosis, which have already been mentioned, there is no doubt as to the existence of a neuromimetic state.

The treatment of hysterical lateral curvature will depend very greatly upon the extent of the debility of the extrinsic spinal muscles, and the consequent malposition of the spine and scapulæ. In many cases we can overcome the purely functional inertia of the spinal muscles, by suitable exercises, etc. But if the patient be a rapidly growing girl, either just approaching, or just past her menophania, more radical measures may be demanded. If the muscular lassitude be great, and the malposition a *constant* attendant of the standing or sitting position, it has been my habit to apply a very light and closely-fitting *elastic*, steel support. By its use we can succeed in antagonizing the dorso-lumbar

excurvation, and thus secure the normal antero-posterior curves of the vertebral column. If the normal antero-posterior curves are successfully maintained, the lateral deviation as well as the drooping scapula seem to care for themselves.

This support consists of, 1st. Two light steel uprights, bent in the line of the normal curves of the spine, with the anterior dorso-lumbar curve slightly exaggerated. These uprights are then tempered; 2d. A pelvic band, reaching from trochanter to trochanter, to the centre of which these uprights are rivited, as in the conventional spinal brace for Pott's disease; 3d. An anterior bandage or "apron," which secures these uprights and the pelvic band firmly against the body; 4th. The customary axillary pads, which pass from the upper termination of the uprights (about the second dorsal) to a crosspiece opposite the lower angles of the scapulæ. The resistance afforded by this simple support is sufficient to hold the vertebral column in the desired position, and yet the apparatus in no way interferes with natural or even graceful movements; and the muscles, though supported, are not deprived of exercise and use. This support also is worn a part of the day only, as a rule, suitable exercises, massage, faradism, etc., being used as circumstances indicate. Usually the support can be removed after a few weeks or months.

If space permitted, I might add cases illustrating neuro-mimesis of disease of the ankle, elbow, wrist and shoulder joints. And I have seen two or three mimic cases that might easily be called sacro-iliac disease, so closely did the symptoms coincide with those which have been recently described as being present in the first stage of this truly formidable lesion. It would be impossible, however, to cover the entire field of the nervous mimicry of joint diseases in one evening. The same rules, and the conclusions

deduced from our study of the mimicry of knee, hip and spine diseases, are equally applicable to the differential diagnosis of the true and false lesions of other articulations.

Hysterical club-foot is not of very frequent occurrence, though a distorted ankle joint may frequently accompany other contractions of an hysterical character at the knee and hip. Laycock states, "that local hysterical paralysis will give rise to a distortion of the foot,"* and Shaw† describes a case in which the "ankle was at this time turned round, so that she walked on the outside of her foot." Dr. W. J. Little, in his classical treatise on Club Foot,‡ thus describes the position of the foot in a case of talipes varus acquisitus (hystericus) in a girl of 19: "its outer margin alone touching the ground, the sole presenting vertically backward, the tibialis anticus, tibialis posticus and gastrocnemii tendons being tense from contraction of their respective muscles, and toes firmly incurvated; she was unable to rest on the limb, the attempt being followed by an outward yielding of the tarsus, which brought the superior surface of the os cuboides to the ground. Locomotion could only be effected with crutches." Another case is also mentioned by the same writer: "Wherein contraction of the right anterior tibial muscle has been erroneously considered the sole cause of the distortion, and for the cure of which its tendon had been divided. I found that contraction of the posterior tibial muscle was the cause of the continuance of deformity."

Skey relates the following very interesting case:§

"In the year 1864 a young lady of 16 years of age was placed under my care under the following circumstances:

* Op. cit., page 130.

† Further observations on Distortion of the Spine. By John Shaw, page 184, London, 1825.

‡ Club Foot and Analogous Distortions. By W. J. Little, M.D., F.R.C.S., page 229. London, 1839.

§ Op cit., page 104.

For eight months prior to her visit to me, she had been suffering from inversion of her left foot, which was so twisted as to bring the point of the foot to the opposite ankle. * * * Her family consulted a surgeon of much experience in the treatment of distortions and of orthopædic notoriety. The case was considered as an example of an ordinary distortion, and the foot was placed in a very elaborately made foot splint, by the force of which it was made to approach a parallel relation with the other foot ; but it was an approach only, for no mechanism could retain it in a perfect position, the toes yet in some degree pointing inward. Months elapsed, and the disease continued unchanged. A second orthopædic authority was then consulted, in conjunction with the first, and as no new light was thrown on the disease by the combined opinions of the two, the same principle of treatment was recommended to be continued, and the mechanism was somewhat more elaborated. * * * When the apparatus, which she had worn so long was removed on the occasion of her visit to me, her foot immediately resumed its twisted form. * * * The disease had appeared almost suddenly, in a person hitherto healthy. It could not be due to congenital deformity, and the limb gave no indication of disease or disorganization. There was neither pain, heat or swelling. In this case, also, there was no catamenial derangement.

I removed the apparatus from the foot, bandaged the limb with a calico roller, ordered a full, nutritious diet, with bark and iron, and having explained the nature of the disease to a friend, sent the young lady home into the country, recommending her to rely on the kindly offices of nature—the greatest of all doctors, orthopædists not excepted. At the end of a month some progress had been made, but not a great deal. She still walked with some difficulty, but it was obvious that she was improving in health and vigor of system. At the expiration of six weeks she accompanied her family to a ball, her foot, as she entered the ball-room being not yet restored to its normal position. She was invited to dance and under the novel excitement she stood up, and, to the astonishment of her family, she danced the whole evening, having almost suddenly recovered the healthy muscular actions of the limb ! She came to see me two days afterward. She walked perfectly well into my room, and paced the floor backward and forward with delight. The actions of the limb were thoroughly restored, and all traces of the previous malady had disappeared.”

Charles Bell also relates a case* in his work on "The Nervous System of the Human Body." Charcôt mentions "a most interesting case," communicated to the Medical Society of Ghent, by Dr. R. Boddaert.† Adams dismisses the matter with the following remark: "A very severe and obstinate form (of talipes) is observable in young girls which is evidently connected with hysteria, and I need hardly say that in these cases the treatment must be directed against the general, rather than the local affection."‡ Brodhurst relates very briefly a case in which certain muscles were contracted, bringing "the outer edge of the anterior portion of the foot to the ground, the inner surface being raised, and the heel fully an inch from the ground,"§—but this condition was not permanent, and occurred during the catamenial periods only. Not to refer individually to all the authors who have written upon orthopædic surgery or club foot, I will briefly state that the seeker after information upon hysterical deformities will be greatly disappointed, especially when consulting the most popular American authorities. Many writers on diseases of the nervous system also practically ignore this subject—or merely mention the existence of such conditions, and several works which I have consulted do not even refer to hysterical club foot. As the nervous mimicry of club foot is not always easy of diagnosis, and as the treatment required is different from that which is applicable to the ordinary forms of talipes, the errors likely to ensue make a brief study of these cases profitable.

I have seen four cases of hysterical club foot. In one of these cases there was contraction also at the knee and hip. In one (Case 12), the distortion came on after emotional

* Referred to by Charcot.

† *Annales de la Société de Médecine de Gand*, 1859, p. 93.

‡ Club Foot. Its Causes, Pathology and Treatment, by William Adams, F. R. C. S. 2d ed. London, 1873.

§ Brodhurst on "Club Foot." London, 1856.

excitement, and other symptoms which will be described. The third occurred in my private practice and was placed, at my request, in St. Lukes Hospital, where it was attended conjointly by my friend and colleague, Dr. G. G. Wheelock and myself. This patient, a precocious and emotional girl of 11, presented many peculiar symptoms, and was discharged unimproved. She afterward recovered at home, I am informed, under severe measures instituted by her father. The following case may, however, be called a typical one, and as ample opportunity was afforded for several examinations, I append the history in full.

CASE 11.—In June, 1878, I was called to see Miss H—, aged 19, living on Long Island, at the suggestion of Dr. A. G. Thompson, of Islip. The patient was incapacitated by a club-foot—which was almost daily becoming more troublesome.

The history developed was as follows: In a hereditary sense there was nothing of special importance, except that a paternal aunt had “died from some lingering nervous disease.” The parents of the patient were living and were in good health.

The patient had rheumatism when she was three years old, and for the three or four years succeeding this attack suffered from recurrence of the same disease. Up to the age of fourteen, when menstruation appeared, she had been otherwise healthy. At the age of fourteen a severe attack of inflammatory rheumatism occurred. In 1877, my friend, Dr. Charles W. Packard examined the patient and found her to be suffering from organic heart disease, a condition (aortic regurgitant), which was evident at the time I examined the case. The patient had never been especially emotional, and, to outward appearance, was in good health.

On the evening of February 22, 1878, she was seized with difficult breathing, pain in the region of the heart, and various, irregular, convulsive movements. There was, in the course of the next few days a repetition of these attacks, and they finally culminated in typical hysterical convulsions, with opisthotonos, etc. Various remedies were used, and after many fruitless efforts it was found that they could be best controlled by full doses of morphine. The effect of these attacks was to induce great debility. The patient could walk very well, but there was no deformity of the foot. Soon after, with no other manifestations of importance, the urine

became suppressed, and for 72 hours there was, apparently, no urine secreted at all. When the bladder was emptied, there was found to be only a comparatively small quantity. Morphine accomplished more than any other remedy in temporarily restoring the secretion of urine, as in the case of hysterical anuria recently reported by Drs. McBride and Mann.* After this, on several occasions, hysterical symptoms manifested themselves, until, on April 21, 1878, the patient began to walk upon the outside of the right foot. There was no pain in the limb anywhere, except that occasioned by undue pressure over the cuboid bone.

After the appearance of the deformity the patient became greatly disinclined to take exercise of any kind, partly on account of the pain produced by walking, and partly on account of an avowed indifference. Her principal occupation had been embroidery or reading. At the time of examination she walked with a very awkward gait, limping very much, and the knee seemed to possess very little strength. The position of the foot was that of uncomplicated varus. The abductor pollicis pedis, the plantar muscles, the tibialis posticus and anticus as well as the gastrocnemius were very rigid, and the ankle-joint seemed actually ankylosed. I made various attempts to overcome the evident muscular contractions, but without avail. The position was not changed by manipulation during sleep. There was slightly reduced sensation below the knee, but no hyperæsthetic areas existed. There was no atrophy.

A diagnosis of hysterical contracture was made. The warm weather was approaching, and it was deemed advisable to give the patient the benefit of a change of scene and air, with the hope that spontaneous recovery would ensue.

On September 12, 1878, the patient came to the city improved as to general health. Neither seashore nor mountain air had, however, affected the condition of the contracture. Before instituting any decided measures in the way of treatment, I thought it best to ask for a consultation, in view of the cardiac complication. Dr. E. C. Seguin examined the patient with me, and a course of treatment was decided upon, and the parents of the patient were informed as to the condition of the heart, and the possible effect of treatment, both upon the heart lesion and the deformity itself. After due deliberation, the father decided to make no effort in the way of treatment. The patient returned to her home, and has

* A case of Hysterical Anuria Cured by Restoring a Lacerated Cervix Uteri. ARCHIVES OF MEDICINE, June, 1879.

since remained tolerably well, though I am informed that, of late, the opposite foot has shown a decided tendency to assume the same position as the one which was first deformed.



The position of the foot is shown in the accompanying engraving. As a matter of comparison, both feet are represented. It will be noted that, in addition to the varus position, there is a peculiar and extreme flexion of the toes. In every case of hysterical talipes I have seen, this same peculiar flexion occurred, and a reference to Charcôt's cases of hysterical contracture of the lower extremities, will demonstrate this same characteristic sign of hysterical affections of the foot. In true talipes this condition does not often exist, and its presence may be looked upon as an indication of the hysterical state.

The following case presents many interesting and instructive features, and illustrates the many phases "hysteria" may assume in boys of tender years, including even a neuromimesis of club-foot.

CASE 12.—Willie M——, aged 10 years, residence Bridgeport, Connecticut. I saw the case first in consultation with Dr. D. H. Nash, September 29, 1877. Hereditary history good: no circumstance to note in early life.

While attending a military review in August, 1877, the patient fell, striking his back against the fluke of an anchor. The

third lumbar was the point of injury and the evidences of the contusion caused thereby were evident for several days. While they were still present, about one week after the fall, he complained of weakness in his limbs, and, one night when ready for bed, he said he could not walk; he crawled up stairs on his hands and knees. The following morning he was much worse, was unable to stand alone and complained of great pain. The family physician was called in, who, after hearing the symptoms, asked "Have you hurt your back in any way?" Not an unnatural question under the circumstances, and the patient who had apparently forgotten the fall, recalled it and related the circumstances thereof to the doctor. The spine was examined and a tender spot discovered at the point of injury. Counter irritation (croton oil), and rest were prescribed. The patient became worse: extreme pain in the back prevented his being moved in bed and soon he could not move his limbs. Then there was an apparent loss of sensation, for he professed utter indifference when pinched, or even pricked with a needle, especially in the right lower extremity; both limbs, especially the right, became cold. Such was the history given to me by Dr. Nash and the parents of the boy. I copy the remainder from my case-book.

Examination.—September 29, 1877. Patient in bed; countenance pale and apprehensive; complains very much at any attempt to change position; severe pain located in back in region of third lumbar vertebra; pulse 95; auxiliary temperature 98.4°. Is unable to move lower extremities, which show a reduced temperature as tested by Seguin's surface thermometer. Normal joint motion in lower extremities, except at the right hip joint where a marked psoas resistance was met, such as is frequently found in the first stage of chronic spondylitis, in the region suspected; but this resistance yielded to a gentle and continuous force; rotation of thighs normal. At the expense of a good deal of pain, the vertebral column was proven to be normally flexible in all directions at the point of injury. The faradic reaction of the muscles of the left leg and thigh was normal, taking the biceps cubiti as the standard. On the right side, however, there was a very evident reduction, in the reaction of the quadriceps extensor cruris and the peronei. There was also a very considerable anæsthesia, especially of the right thigh and leg. A further examination of the vertebral column by palpation, demonstrated pain on slight pressure at the seventh cervical vertebra and at the point of injury, which still showed the peculiar eruption of the croton oil.

In the vicinity of the third lumbar there was marked hyperæsthesia ; bladder and rectum normal, though the former had performed its function with some hesitancy. No cerebral symptoms ; reflex movements as induced by titillation of the soles of the feet very considerably reduced on both sides. No apparent atrophy of either limb ; limbs equal in length and circumference.

There was no history of fever, though early thermometrical observations had not been taken, and no other acute symptoms were noted than those above mentioned. The apparently excruciating pain was excited by any movement, especially by a sudden jar ; it was with great difficulty that the patient was raised sufficiently to permit the use of a bed pan, and the bed linen though soiled, had not been changed for many days.

In reviewing the case in consultation, I declined to make a positive diagnosis with only one examination. Two conditions presented : a lesion of the spinal column (which had been strongly suspected) was eliminated by the normal flexibility of the spine at the suspected point and the absence of other symptoms which would positively indicate chronic spondylitis.

1st. An obscure lesion of the spinal cord, the early symptoms of which had been overlooked, leaving a slight sensor and motor paresis of the right leg. The fact that the external evidences of injury were located below the termination of the spinal cord was commented upon at the consultation.

2d. A neuromimesis. I inclined decidedly to the latter, and so expressed myself. I advised the continuance of the recumbent posture, tonics, and recommended a careful avoidance of any allusion to the patient's condition in his presence, and suggested that the counter irritants be discontinued. The patient was to be lifted daily upon a blanket, and the bed linen changed. A second consultation was arranged for a few days later.

October 3d.—Upon entering the room, I proposed to move the bed so as to obtain a better light. To this the patient made ur-

gent objection, and burst into tears. A promise that the bed should not be moved restored his equilibrium. Axillary temperature normal; pulse 85; no change in the faradic reaction of the muscles of either limb; anæsthesia still present; apparent psoas contraction which yielded to manipulation as before. The pain in the back was worse rather than better; appetite fair; bladder and rectum normal; but *the muscles of each lower extremity were very rigid*, and it required both time and tact to demonstrate that this rigidity could be overcome, but the patient's mind being diverted, this condition ceased suddenly, and free passive motion was permitted, but apparently at the expense of greatly aggravating the pain in the back. Adherent prepuce and masturbation had been eliminated from the case.

The irregular character of many of the symptoms, the exaggerated quality of those that did present with anything like constancy, the absence of definite indications of a cord lesion, and the certainty that there was no osseous lesion, determined the case, in my mind, to be hysterical. Feeling that I had the confidence both of the parents of the child and of the child himself, I deliberately lifted the boy from his bed, bore him across the room, and placed him in an easy chair by the window. Supporting the rigid limbs first with my hands, and then upon my knees, I called his attention to some passing object. The rigid muscles again relaxed.

After some assumed hesitation on my part, I permitted the patient to sit up for half an hour, watching him closely. The pain in the back disappeared, and when I left to return to town, he was sitting up in his bed, eating his supper with good relish. Instructions were given to make him leave his bed the following morning. He was to go out of doors every day, where he was to be allowed to do as he pleased. The following, quoted from a letter which I received from his father a short time after, will show the success of this plan of treatment: "Your patient sat up on Sunday (the day following your second examination), walked all about the

house on Monday, was out of doors walking and riding on Tuesday, and every day since he has kept it up. He walks a little stiffly or weakly, but without a cane or any assistance." The improvement continued, and the boy soon walked naturally.

About three weeks later the father of the patient found it necessary to deny him some favor which he had asked. The patient sobbed convulsively, threw himself upon the floor and cried bitterly for upward of an hour. The father did not yield, and the child finally submitted and went to bed. The next morning a new symptom developed. The *left foot* assumed the position of talipes equino-varus. I was again summoned to examine the boy, whom I found playing ball, but walking very badly. Had it been the *right* foot that was affected, I would not have been surprised, for the peronei of the right leg had shown a diminished faradic reaction at both of my previous examinations. An examination, however, cleared the matter up: the peronei of the left leg showed normal contractility, the right alone giving diminished reaction. No other new symptom presented. Pain in the back had wholly disappeared, though the anæsthesia of the right leg still remained to a slight extent. The psoas contraction was gone. No attention was to be given to the "turning of the foot," and stimulated by a promise that he should have some money with which to buy Christmas presents if he overcame this trouble, it gradually disappeared, and has never returned.

The diminished faradic reaction, the anæsthesia, the unilateral psoas contraction and the greatly modified reflex action were the symptoms in this case that threw doubt upon the diagnosis. They are all compatible with the early hysterical state except the one first mentioned, and this condition remained after the boy's recovery.

Great care is necessary in determining the quality of the faradic reaction in suspected muscles, where the modification of the contractility is slight. My usual procedure was suggested by Dr. Seguin, and serves a good purpose. I use the five-post Kidder (tip) battery, and first find the normal

reaction of the biceps cubiti. With this as a standard, I test the muscles of the sound limb, and the superficial muscles will generally respond to the same current. The cylinder of the battery is marked in fractions of an inch. I then test the suspected muscles with the same current, and increase its strength until the point of evident reaction is reached. A difference sufficient for diagnostic purposes can thus be demonstrated.

The treatment of hysterical contracture* is, as a rule, very unsatisfactory, and the issue is sometimes doubtful. Many cases recover spontaneously, while others persist for years.

In one of Dr. Little's cases of hysterical club foot, operative measures were completely successful. In other cases, after various remedial agents had failed, recovery has taken place at a time and under circumstances which involved an unexpected demand upon the volition of the patient, or under some form of emotional excitement. Purely mechanical treatment is apt to prove very unsatisfactory, and if used at all, preference should be given to cases of confirmed hysterical paralysis, where all other means have failed, or to the more exaggerated forms of hysterical spinal curvatures, where some simple, *elastic* support is indicated. And

* I am indebted to my friend, Dr. Mary Putnam Jacobi, for the following extract from Duchenne's "*De l'électrisation localisée*," 2d ed., p. 926. "The following is a remarkable example of a rapid cure of a hysterical contracture of the masseters, which had existed for two years." Obs. CCXIV (condensed). The contracture came on without any appreciable cause other than the hysterical state. Alimentation being difficult, an apparatus had been made which maintained the jaws slightly apart, and which was constantly worn. The contracture disappeared under chloroform, but it reappeared. It had disappeared spontaneously on one occasion, and had existed continuously for six months, when, after failure under the care of Drs. Campbell and Nélaton, it came under Duchenne's observation. The contracture disappeared entirely under the influence of "electro-cutaneous excitation"—two applications.

A case of hysterical contraction of the thumb, in a girl of ten, recently applied at the Orthopædic Dispensary. It had existed for several months. The patient wore, under my direction, a splint for about ten days. She was then transferred to Dr. Clovis Adam, Electro-Therapeutist to the Dispensary. Three applications of a strong faradic current to the antagonistic muscles produced a complete recovery. And Dr. Adam also reports a case, in a woman of 25, of hysterical contraction of the hand and thumb, also completely relieved by similar measures.

even in these instances, the use of apparatus should be made secondary to other measures. The application of mechanical force to overcome the deformities induced by hysterical contracture is positively contra-indicated. In the case of Miss H., Dr. Seguin proposed the use of atropia, hypodermically, in heroic doses, and the application of faradism, locally. The use of apparatus was not even discussed.

At his examination of this patient (Miss H.) Dr. Seguin tested the electrical conditions of the muscles of the affected limb. The following is extracted from his note-book:—"External popliteal nerves react equally (both sides) to faradic current of weak power; muscles of anterior tibial and of peroneal regions react on both sides to same current, but right peronei contract less because of their stretched state. Galvanism (25 elements) to external popliteal nerves gives normal and jerky contractions on both sides. Knee tendon reflex moderate and equal on both sides."

My own examinations of the muscles, made both before and after Dr. Seguin's tests, agreed with the above. I also found a normal response from the contracted tibialis posticus—the same current producing contractions on either side, the extent of the contraction being only less in the affected muscle, and this was due, I infer, to the fact that the muscle was shortened.

Charcôt describes the prominent feature presented by this case as *permanent contracture*, and refers to it as being among "the most interesting peculiarities connected with the singular manifestation of hysteria."* He presents several cases which are fully detailed, and the conclusions reached are very valuable, and especially so to us in our study of the muscular conditions, as applied to deformities. This eminent writer says: "We have here a permanent

* On Diseases of the Nervous System. New Sydenham Edition, 1877. page 283.

contracture in the rigorous sense of the word. I have assured myself that it is in nowise modified during the profoundest sleep; in the day-time there are no alternations of increase or remission. The slumber alone which chloroform produces causes it to disappear if the intoxication produced be considerable. * * * The nutrition of the muscles has not sensibly suffered and the electrical contractility remains nearly normal."*

The diagnostic value of purely functional atrophy, of the effect of the anæsthesia induced by chloroform or ether, and the electrical test, in the conditions I have attempted to describe, are again made evident by Charcot's testimony. Indeed, in obscure cases, they form very valuable aids to diagnosis. It does not answer, as we have seen, to assume because a patient is hysterical, that all the symptoms partake of this character, however closely the obscure, but real, symptoms may resemble the nervous. And if, in a moderately emotional woman, for example, a condition of hysterical contracture should exist at the hip-joint, with other symptoms closely resembling hip disease, the difficulties of diagnosis can be very easily appreciated.

Briefly, then, we may summarize our observations upon the muscular conditions in joint disease, in the emotional *contractions* and in the hysterical *contractures*, as follows:

1st. In chronic osteitis of the articulations there exists a specific muscular atrophy, due to the lesion; an invariable muscular spasm—which is present night and day, and which, while not modified by the customary doses of chloral or opium, disappears completely under the anæsthesia induced by ether or chloroform. There is present also a marked reduction of the faradic contractility of the muscles thus affected.

2d. In the emotional contractions we find the atrophy

*Op. cit., page 285.

of disuse only,—a variable muscular rigidity which disappears during natural sleep, or yields to opium or chloral—and a normal faradic contractility.

3d. In the hysterical contracture we see a “permanent” muscular rigidity, which like the muscular spasm of chronic osteitis, is wholly dissipated by the profound anæsthesia of ether,—but we find in connection with it, functional atrophy only, and a normal faradic reaction of the muscles.

4th. The test of anæsthesia induced by ether or chloroform, as applied to the differential diagnosis of hysterical contraction and chronic articular osteitis is not of value, *per se*, though some eminent authorities have stated otherwise. Ether or chloroform will remove the “permanent contracture” of the one, and suspend the reflex spasm of the other. The elements of absolute contracture,—such for example, as are met with in congenital talipes or torticollis, and intra- or extra-capsular changes (fibrous ankylosis, osteophytes, etc.,) being eliminated, we should bear in mind, in making our examination of suspected joints, under ether, Charcot’s valuable deduction, viz., “that the existence of a spinal, organic lesion, of more or less gravity will be placed almost beyond a doubt, if under the influence of sleep induced by chloroform, rigidity of the members gives way slowly, or even persists to any marked extent.” *

* Op. cit., p. 297.

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